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FURTHER WORK ON THE TREATMENT OF SLEEPING SICKNESS: A CRITICAL REVIEW.

By WARRINGTON YORKE, M.D.
Sectional Editor, Tropical Diseases Bureau.

Since the appearance of the previous review on this subject in November, 1921 (this *Bulletin*, Vol. 18, pp. 155-174), a number of important observations have been made dealing particularly with the therapeutic value of two comparatively new drugs, viz., Tryparsamide, and "Germanin," or, as it is more generally known, "Bayer 205"; and it appears to the reviewer that it might be useful to summarize the results hitherto obtained with these drugs in the treatment of human trypanosomiasis.

Germanin, or "Bayer 205."

This drug, the chemical constitution* of which has not so far been published, is a product of Fried. Bayer & Co., Leverkusen. It contains neither arsenic nor antimony, and is a white flocculent powder, readily soluble in physiological saline and in distilled water: the solution is odourless and has a slightly bitter taste; it is neutral to litmus, keeps well, and stands sterilization. The drug was sent to HAENDEL and JOETTEN (1920), and to MAYER and ZEISS (1920), for trial, and proved remarkably successful in the treatment of experimental trypanosomiasis in small animals. These excellent results were speedily confirmed by other workers.

The first case of sleeping sickness treated with Germanin came from Fernando Po, where he was infected with *T. gambiense* in October, 1919. He was admitted to the Hamburg School of Tropical Medicine in March, 1920, and given two doses—each consisting of 0·2 gm. of

*FOURNEAU, TRÉFOUËL and VALLÉE (1924*a* & *b*) believe that they have discovered the formula of "Bayer 205," viz.: The urate of meta-aminobenzoyl-para-methyl-meta-aminobenzoyl-I-amino-naphthalene-trisulphate of sodium-4-6-8. Owing to the difficulty experienced in obtaining a sufficiency of "Bayer 205," the authors state, however, that they are not absolutely certain. They have prepared a substance which they designate "309," and which they believe is identical with "Bayer 205."

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the drug intravenously—at an interval of seven days. This had, however, but little effect, the trypanosomes increased in number, and tartar emetic was administered; but subsequent experience has shown that the doses given in this case were far too small.

The second case in whom this drug was tried was a patient of the reviewer [YORKE (1921)]. He became infected with *T. rhodesiense* in north-eastern Rhodesia in September, 1920, and after various courses of treatment with tartar emetic, antimony oxide and soamin had been given unsuccessfully in Africa, the patient was invalided home and admitted to the Liverpool School of Tropical Medicine in March, 1921. Further injections of tartar emetic and atoxyl were given, but the infection appeared to be almost completely resistant to these drugs, and the patient went steadily down hill, although no definite nervous symptoms had manifested themselves. As the reviewer was unable to obtain any Germanin for trial, the patient was sent to Hamburg in July, 1921, for treatment with Germanin. On July 9, an intravenous injection of 0·5 gm. of the drug was given, and this was followed by an injection of 1 gm. on each of the next two days, and by a further injection of 1 gm. after an interval of a week. In view of the development of albuminuria and of very slight haematuria treatment was now stopped. The patient, whose blood had become negative within a few hours of the first injection, rapidly improved, has not relapsed, and is alive and well at the time of writing (May, 1925).

The striking success of Germanin in this case, in which the ordinary preparations of arsenic and antimony had failed, naturally focussed attention upon it, and KLEINE and FISCHER were sent out to Northern Rhodesia and to the Congo to test the therapeutic value of the drug on a large scale.

KLEINE and FISCHER published a preliminary account of their work in 1922, and their final reports in 1923 and 1924. Thirty-five cases of *T. rhodesiense* infection were treated. Lumbar puncture was rarely made before treatment, but probably the percentage in the nervous stage of the disease was high, as about half of the cases had to be carried into the camp. The routine treatment consisted in giving 1 gm. subcutaneously on the first, tenth and eighteenth days respectively; those with trypanosomes in the cerebrospinal fluid, and those which relapsed with parasites in the blood received two further injections. When the authors left Rhodesia a few months later (November, 1922) one case had died, but the others had all shown remarkable improvement. Three months after commencement of treatment lumbar punctures were made in 21 patients, and in 8 of these trypanosomes were found. The authors state that these cases all presented nervous symptoms at the commencement of treatment and that at the time of lumbar puncture these symptoms had disappeared; so much so, indeed, that 6 of the 8 patients gave an appearance of being decidedly vigorous and performed heavy work. KLEINE and FISCHER believe that "Bayer 205" is able to exercise some influence upon the parasites in the brain, and that the trypanosomes which are not killed off are nevertheless greatly reduced in virulence. About six months later (April, 1923), after the authors had left Rhodesia for the Congo, they heard from the Native Commissioner at Lundazi that three more of their cases had died; two of these were severely affected at the time of treatment and the third apparently died from an abdominal tumour.

In the Congo, KLEINE and FISCHER treated about 150 patients, most of whom were in the first or second stage of the disease, and about 10 per cent. in the third stage. Lumbar puncture was done before treatment in 24 cases, who showed no nervous symptoms, and were uniformly negative. The routine treatment given was 1 gm. of the drug intravenously on the first, third and fifteenth days. In all the cases of the first and second stages improvement was obvious, and of 96 patients whose blood was examined at least every week for five months after the third injection, two only—both children—relapsed. In seven cases in the third stage of the disease, five injections of "Bayer 205" produced no improvement; the blood of all, however, remained free from trypanosomes as long as they were under observation, but trypanosomes were found in the cerebrospina fluid of two.

Fortunately, a certain amount of information regarding the later history of these two series of cases treated by KLEINE and FISCHER is now available. In a letter to the reviewer, dated Livingstone, September 15, 1924, Dr. Aylmer MAY, Principal Medical Officer o Northern Rhodesia, states that KINGHORN has traced all KLEINE and FISCHER's Rhodesian cases, and that of the 35 treated by them 29 are dead, mostly of sleeping sickness. This is confirmed in a letter from KINGHORN himself, written from Lundazi, and dated October 9, 1924, in which he states that only five of KLEINE's cases are alive, and that the others, so far as he has been able to ascertain, died of sleeping sickness; KINGHORN adds that the five who are still alive are healthy and that he could not find any trypanosomes in the peripheral blood.

Information is also available regarding the later history of the Congo cases. FONTANA, in a paper published in April, 1924, and presumably compiled from data obtained a month or two earlier—that is, about a year after the cases were treated by KLEINE and FISCHER—supplies information regarding 83 of the 150 cases. Sixty-five were at the time of treatment in the first stage of the disease, and 18 in the second stage. Of the 65 cases belonging to the first group 51 are probably cured, 8 have relapsed and 6 are dead; and of the 18 cases in the second group 2 are probably cured, 8 have relapsed, and 8 are dead. FONTANA also supplies the interesting information that the average relapse period was 226 days and the minimum 145 days.

TANON and JAMOT (1924) record the result of treating 39 cases of sleeping sickness (*T. gambiense*) infected in a village of Abong-M'Bang in the Cameroons. They divided the cases into the following four categories:—

1. Those exhibiting clinical signs of the first stage of the disease with parasites in the blood, but with normal cerebrospinal fluid. *First stage* (13 patients).
2. Those having a slight degree of meningeal infection manifested by a slight lymphocytosis and by a slight excess of albumose in the cerebrospinal fluid. *Early second stage* (12 patients).
3. Those with a marked excess of lymphocytes and albumose and some trypanosomes in the cerebrospinal fluid. *Advanced second stage* (6 patients).
4. Those exhibiting emaciation, cachexia, somnolence and nervous signs. *Third stage* (6 patients).

The patients were of all ages between 6 and 40, and were of both sexes. The amount of the drug given to each patient was about 3 gm.,

and it was administered in one of two ways, either in three doses of ·5 gm., 1 gm., and 1·5 gm. respectively, at intervals of two days, or in two large doses of 1·5 gm. each at an eight-day interval. The children were given smaller quantities, those of from 6 to 10 years getting ·2 gm. and ·4 gm., and those of 10 to 13 years ·5 gm., ·7 gm. and 1 gm. In 37 cases the earlier injections were given subcutaneously and the later intravenously. No relapse was observed in 30 of the 37 within an observation period of nine months, but in seven relapses occurred. These were for the most part transitory: one case relapsed on the 24th day, but on the 26th parasites disappeared permanently; one case relapsed on the 17th day, and parasites persisted for four months and then disappeared; two other cases relapsed on the 17th day and trypanosomes persisted for five months and then disappeared; one case relapsed after five months and another after six months, parasites persisting for a month and then disappearing; and in the last case a relapse occurred after one and a half months, parasites persisted for 15 days and then disappeared, to reappear again after two months. The author writes that the parasites are not then all definitely destroyed at the commencement, but may reappear at intervals again to disappear; only exceptionally do they reappear to persist. It occurs to the reviewer that this phenomenon may not be due to any particular virtues of "Bayer 205," but may be explicable on the fact that in the locality the infection was of low virulence, either because of some inherent feebleness in the parasite or because of some exalted resistance on the part of the native, and that the same transitory relapses might equally well be observed after the administration of a few doses of atoxyl or salvarsan.

Tanon and Jamot, although they give no details regarding the state of the cerebrospinal fluid before and after treatment in the individual cases, make the general and important statement that its condition is in no way modified by the drug and that apparently "Bayer 205" cannot act on the trypanosomes in the subarachnoid space.

The remaining two of the 39 patients were treated intrathecally. The first, a woman 20 years old, in the third stage, was given ·5 gm., and death resulted seven hours later; the second, a man 25 years old and in excellent condition, was given ·25 gm., but here again death resulted in four hours.

Undoubtedly one of the most important papers on the action of Germanin which has so far appeared is that of van den Branden and van Hoof (1924). These authors have tested the drug on 79 patients at Leopoldville, Belgian Congo, but, unfortunately, some have escaped observation. They divide the patients into two categories: (1) Those in the *first stage* of the disease with fever, enlarged glands and with not more than 15 elements per cmm. in the cerebrospinal fluid; and (2) those in the *second stage* exhibiting a meningeal reaction indicative of profound changes in the central nervous system.

The oral method of administration was tried in one case, 15·5 gm. being given, in fractional doses of 1 gm., 1·5 gm., 2 gm., 3 gm. and 5 gm., within a period of a month; the patient was in the first stage of the disease. Trypanosomes persisted in the circulation and consequently this mode of administration was abandoned as useless.

In order to ascertain the duration of blood sterilization obtained by a single dose, two patients, one in the first stage and one in the

second stage with 1,440 lymphocytes per cmm. in the cerebrospinal fluid, were given an intravenous injection. The first patient, who was given 1 gm. of the drug on October 10, 1922, has remained well with negative blood and normal spinal fluid presumably up to the time the report was written, viz., February 15, 1924; the second patient, who received 2 gm. of the drug, died five months later from sleeping sickness, but the blood never again showed parasites.

After having made these preliminary observations, VAN DEN BRANDEN and VAN HOOF proceeded to make a systematic trial of the drug in a series of cases in the first and second stage. Nineteen cases in the first stage were given the ordinary course of treatment, viz., 3·5 gm. in four doses, the first of ·5 gm., followed the next day by a dose of 1 gm., and then at intervals of six to eight days by two others each of 1 gm. Of the 19 cases so treated 12 have not relapsed during a period of 5-16 months (in nine the period was more than a year); of the remaining seven cases, one died from intercurrent disease, a second disappeared, and the other five have shown trypanosomes in their blood from time to time, although their general condition has remained excellent. The authors state that it will be interesting to ascertain whether any of these patients recover without additional treatment. Details of all these cases are set forth in a table showing, amongst other things, the condition of the cerebrospinal fluid before and after treatment. The authors state that the further progress of the cases will be carefully watched, and surmise that in three of them there is little chance of a permanent cure, as the slight alteration in the spinal fluid suggests that the infection continues, and that without further treatment they will die.

Twenty-five cases in the second stage of the disease were treated by VAN DEN BRANDEN and VAN HOOF; in 13 the drug was given intravenously, in three it was given both intravenously and intrathecally, and in nine the drug was injected intravenously and the serum afterwards withdrawn and injected intrathecally on the lines suggested by REICHENOW and later by MARSHALL. Of the 13 patients treated by intravenous injection alone, some received only the ordinary course of 3·4 gm., but others were given as much as 17·5 gm.; six are dead, one has relapsed with trypanosomes in the blood and the remaining six are still negative, but are in bad condition, and the lymphocytosis in the cerebrospinal fluid has increased. No particular advantage seemed to result from the larger doses.

As the result of testing the combined intravenous and intrathecal administration in these advanced cases, the authors conclude that intrathecal administration is useless and dangerous; even so small a dose as ·05 gm. may produce grave symptoms and ·3 gm. may be fatal.

Nine patients were treated by intravenous injections of 1 to 1·5 gm. of the drug combined with intrathecal injections of 5 to 11 cc. of their own serum withdrawn two hours later. The serum proved non-irritating and produced no untoward symptoms. Only one of the nine, who between September 5, 1922, and March 13, 1923, had 16 gm. of "Bayer 205," and 10 cc. of serum intrathecally, appeared to be benefited by the treatment; his general condition improved and the blood remained negative, and there was a diminution in the cell count in the spinal fluid; four of the remainder are dead, and in the others the disease has advanced. VAN DEN BRANDEN and VAN HOOF conclude from these observations that "Bayer 205" is of little use when given to patients in the second stage of the disease.

TABLE I, SHOWING RESULT OF TREATMENT OF EUROPEAN CASES OF SLEEPING SICKNESS WITH "BAYER 205."

No.	Author.	Initials (of case).	Where and when infected.	Previous treatment.	"Bayer 205."		Result.	Post-treatment observation period.	Remarks.
					Dates of administration	Total dosage.			
1.	Mühlens & Menk.	?	Fernando Po, Oct. 1919.	?	Mar. 1920 ...	·4 gm.	Unaffected ...	—	Given tartar emetic and disappeared.
2.	Mühlens & Menk; and Yorke	G.J.	N. Rhodesia, Sept. 1920.	Much arsenic and antimony.	9-18 July 1921	3·5 gm.	No relapse; alive and well May, 1925.	3 yrs. 10 mths.	—
3.	Mayer & Menk.	J.D.	Congo, Dec. 1920.	Much arsenic and antimony.	30 Mar. 8 Apr. 1922.	4 gm.	No relapse; returned to Congo June 29, 1922. Well Dec. 1923.‡	1 yr. 9 mths.	—
4.	Menk ...	K.F.	Portuguese Africa, Aug. 1922.	A little atoxyl.	26 Sept.-25 Oct. 1922.	5·5 gm.	—	—	Trypanosomes disappeared, no after history available.
5.	Stephens & Yorke.	H.L.S.	Nigeria, Jan. 1922.	A little atoxyl and novarsenobillon.	30 May-27 June, 1922	4 gm.	No relapse; alive and well May, 1925.	3 yrs.	—
6.	Low and Bahr.	McA.	Nigeria, July, 1921.	Antimony and atoxyl.	7 July-11 Sept. 1922.	10 gm.	No relapse; well Feb. 1, 1924.	1 yr. 5 mths.	—
7.	,,	S.B.J.	Congo, Dec. 1919.	Large quantities of antimony and arsenic.	1 Dec.-3 Dec. 1921. 1 Mar.-18 Sept. 1922	3 gm. 8 gm.	No relapse, but a second course. No relapse; well May, 1925.*	2 yrs. 8 mths.	— —
8.	,,	G.S.W.	Fernando Po, Apr. 1919.	Antimony	15 Dec. 1921-19 Apr. 1922	18 gm.	Died 21 Apr. 1922.	—	—
9.	,,	K.	Congo, June, 1921.	Atoxyl ...	27 Dec. 1921-2 Mar. 1922.	10 gm.	Well till 23 Oct. 1923.	1 yr. 7 mths.	Murdered on 23 Oct. 1923.
10.	,,	B.	Nigeria, 1921.	Nil ...	11 Mar.-28 Apr. 1922.	10 gm.	Alive and well Aug. 1923.	1 yr. 4 mths.	—

11.	,,	C.	Nigeria, Oct. 1921.	Antimony and atoxyl.	26 June 1922.		1924.†		
12.	,,	L.S.	Nigeria, 1922.	Nil ...	23 May-25 July, 1922.	10 gm.	Alive and well July, 1923.	1 yr.	—
13.	,,	Mrs. S.F.W.	Congo, Oct. 1919.	Atoxyl ...	Aug.-Sept. 1922.	10 gm.	Relapsed Jan. 1923.	—	Apr. & May, 1924, treated with tryparsamide; remained well until seen, 5 July 1924.
14.	,,	J.M.	N. Rhodesia, Dec. 1921.	Nil ...	Jan. 1922. 16 June-13 Sept. 4–28 Nov.	2 gm. 14 gm. 15 gm.	Died 7 Jan. 1923.	—	—
15.	Low ...	McD.	Gold Coast, Dec. 1922.	Nil ...	7 Apr.-30 June 1923.	12 gm.	Alive and well 31 Mar. 1924.†	8 mths.	—
16.	,,	McC.	Nigeria, Jan. 1923.	Nil ...	27 June-6 Sept. 1923.	10 gm.	Alive and well Mar. 1925.†	1 yr. 7 mths.	—
17.	,,	J.	Nigeria, Oct. 1922.	Nil ...	7 Aug.-13 Oct. 1923.	—	Alive and well 14 Feb. 1924.	4 mths.	—
18.	,,	V.	Congo, June, 1921.	Nil ...	14-27 July, 1923. 24 Oct.-28 Dec. 1923.	2 gm. 10 gm.	Alive and well 26 Jan. 1924.	1 mth.	—
19.	,,	A.H.W.†	Nigeria, Sept. 1923.	Tryparsamide 28 July-18 Aug. 1924. 8·5 gm. 25 Aug.-24 Oct. 1924. 30 gm.	21 Nov. 1924-23 Jan. 1925.	10 gm.	Relapsed 25 Aug. 1924. Relapsed 18 Nov. 1924. Alive and well 14 May, 1924.	3½ mths.	Relapsed after 38·5 gm. of tryparsamide and treated with "Bayer 205."
20.	Manson-Bahr.	C.W.R.W.*	Gambia, 1924.	—	June-July, 1924.	5 gm.	Relapsed 8 Aug. 1924. Alive and well, May, 1924.	8 mths.	Relapsed after 5 gm. of "Bayer 205," and treated with Tryparsamide, 9 Aug.-21 Sept., 1924, 24 gm.

* Information kindly supplied by Dr. Manson-Bahr, 15 May, 1925.
†Information kindly supplied by Dr. Low, 15 May, 1925.
‡ Information kindly supplied by Dr. Mühlens, 25 May, 1925.

Finally, eight ambulatory cases were treated with three to five weekly injections of 1 gm.; two quickly relapsed with parasites in the blood, but in the remainder the blood has been negative for periods varying from four to nine months.

LETONTURIER, DE MARQUEISSAC and JAMOT (1924) tested "Bayer 205" on 35 cases infected in the Cameroons. The amount of the drug given was a total 3 gm. for an adult in two or three injections at three to seven day intervals. Of the 13 patients in whom the cerebrospinal fluid was normal nine appear to be cured and four have relapsed and have been treated with other drugs; all are in excellent condition. Of the 22 patients in whom the cerebrospinal fluid was more or less altered 11 are dead and of the remainder six have relapsed, nine are in good condition, and two in bad condition. The authors, without giving any details, remark that the drug produced no appreciable modification in the meningeal reactions.

Very important information concerning the effect of "Bayer 205" is furnished by CHESTERMAN (1924), who treated 17 cases, all well advanced in the second stage of the disease. The cases are divided into two groups, the first comprising nine cases who had received previous treatment with arsenicals, etc., and the second consisting of eight cases who had had no previous treatment. The drug was given intravenously in 1 gm. doses repeated at weekly intervals; the number of doses varied from two to five or six in the different cases. Of the 17 cases, two died of intercurrent bilharzial dysentery, two died of acute nephritis; two who had during previous treatment with soamin suffered from amblyopia, became completely blind; eight returned in periods varying from six weeks to 15 months in a condition worse than when treatment was suspended; one case, who remained with a cell count of 75 in the spinal fluid and was evidently far from normal, was treated with tryparsamide; and 2 cases were evidently improved, but have not been re-examined, although reports received four and five months after treatment indicate that both are well. CHESTERMAN summarizes in a table his pathological findings in the cerebrospinal fluid in 11 of the cases, and, as he states, the results are frankly disappointing, as all exhibited a considerable lymphocytosis and excess of albumen four months or more after treatment.

HANINGTON (1924) gives general information regarding the treatment of a number of cases of sleeping sickness at Sherifuri, Northern Nigeria. He states that the disease is not of the mild form usually associated with West African sleeping sickness, but runs a rapidly fatal course. The patients were practically all of early middle age. When possible the drug was given in 1 gm. doses on the 1st, 3rd, 5th, 12th and 19th days. Up to the end of July, 1924, 11 deaths had been recorded among the 114 cases treated with "Bayer 205," but of the six fatal cases three had received only a single dose of the drug and three only two doses.

In a report dated 7 March, 1925, LLOYD gives further information regarding HANINGTON's cases. Of the 131 treated with "Bayer 205," 15 are dead. Of these, 11 had not had the full course, one had received 5, one 6, and two 7 injections; the last three were advanced cases of the disease when treated. Three were found to be infected a year after their initial treatment, but LLOYD considers these were re-infections and not relapses. [The evidence supporting this hypothesis is, however, not very convincing.] LLOYD writes that the best evidence of the efficacy of the drug in the early stages of the

disease is afforded by the history of the five natives who acquired the disease whilst on the staff of the Tsetse Investigation Commission. Of these, two are in perfect health 12 and 22 months respectively after treatment. Only one of the 31 cases appeared to have been really resistant to the drug. He was in a very advanced stage when treated, and after receiving three doses of the drug died a few days later with trypanosomes in the blood. The epidemic in the Sherifuri district appears to have died down. In 1923, 99 cases reported, in 1924, 47 cases, and in the first two months of 1925 only 3. LLOYD considers that it is highly probable that the use of "Bayer 205" has largely helped to stem the epidemic.

From Table I, which summarizes the results obtained in the treatment with "Bayer 205" of Europeans suffering from trypanosomiasis, it will be seen that Case 18 was unaffected, the dose of the drug given being now known to be quite inadequate, and that no after history is available in Case 4. Of the remaining 18 patients, two—Case 8, infected with *T. gambiense*, and Case 14, infected with *T. rhodesiense*—are dead; two—Cases 13 and 20—have relapsed; the other 14 cases have done well, but in six of these the observation period is less than one year, whereas in eight it varies from one year to practically four years. It should be noticed that the two patients (Cases 13 and 20) who relapsed after "Bayer 205," were both subsequently treated with tryparsamide and both have done well and have not relapsed within an observation period of two and eight months respectively; on the other hand, Case 19, who relapsed after a course of 38·5 gm. of tryparsamide, was subsequently treated with "Bayer 205," and has not relapsed after three and a half months.

These results, so far as they go, are very satisfactory, but it must be remembered that although spinal punctures were not made, probably most of the cases were in the first stage of the disease at the time of treatment.

Tryparsamide.

Information regarding the mode of preparation and chemical constitution of this preparation was first published in 1919 by JACOBS and HEIDELBERG, of the Rockefeller Institute. Tryparsamide is the sodium salt of N. phenylglycineamide-p-arsenic acid, and it is stated to be easily prepared, stable and soluble. At the same time, PEARCE and BROWN gave an account of its biological behaviour and therapeutic action on animals experimentally infected with trypanosomiasis. Two years later (1921) PEARCE and BROWN published the results of further experiments regarding the therapeutic value of tryparsamide on mice, rats and rabbits experimentally infected with *T. rhodesiense* and *T. gambiense*, from which the conclusion is reached that its action on the former parasite is much less than on the latter.

With a view to testing the action of the drug on infected human beings, Miss PEARCE was sent by the Rockefeller Institute to the Belgian Congo in May, 1920, and conducted a long series of most careful observations at the Government laboratory and Hôpital de la Reine in Léopoldville: her report, which is based on observations made on 77 cases, was published in December, 1921.

The 77 cases represented all grades of infection and included previously untreated patients, as well as several who had been already treated with one or more drugs. Trypanosomes were found in all cases except eight, which were under treatment at the time they were

examined; a lumbar puncture was done in 72 cases. Investigations were first made with a view to ascertaining how soon after a single dose of tryparsamide the gland juice became negative, and it was found that in 33 patients gland punctures were always negative within 24 hours of a dose varying from ·3 to 7 gm. or 4·7 to 112 mgm. per kilo. of body weight: similarly, in 35 cases it was found by the triple centrifugation method that the blood was negative within 21 hours after the administration of 1 to 5 gm. of the drug. The general conclusion reached from this part of the work is that 1 to 5 gm. of tryparsamide brings about peripheral sterilization as indicated by gland puncture and blood examination in an average of 6 to 12 hours, and it appears that this result is obtained whether the drug is given intravenously or intramuscularly.

The next question considered was the duration of peripheral sterilization obtained by a single dose of the drug: 21 patients, either in the first stage of the disease, or early in the second stage, as indicated by a slight excess of cells in the spinal fluid, were given ·5 to 5 gm. of the drug; of these 12 relapsed within 17 to 58 days, and 9 did not relapse within an observation period of 40 to 111 days. The drug was given intravenously except in four cases, and Miss PEARCE points out that in these last cases the duration of action was definitely prolonged. In 14 of the cases with initial normal or slightly abnormal spinal fluids a lumbar puncture was made about five weeks after the administration of the drug, and in every instance but one, in which the result was uncertain because of blood contamination, the second cell count continued to be normal, or was decreased towards the normal. The general physical reaction of the patients was prompt and satisfactory; the subjective symptoms disappeared and the pulse rate and temperature became normal within a few days.

Miss PEARCE next deals with the effect of the administration of repeated doses of tryparsamide in early and in advanced cases. The first group of early cases consisted of the 12 who relapsed after the preliminary single dose and two others who had also had a preliminary dose. Ten of these patients were treated at weekly intervals with four to nine injections varying from 20 to 111 mgm. per kilo., and four were placed on a fortnightly schedule; the drug was given intravenously in all cases. The second group of early cases consisted of 13 who had previously been untreated: these were given 1 to 5 gm. tryparsamide at weekly and fortnightly intervals. Trypanosomes were found in the lymph juice before treatment in all cases and the spinal fluid showed a normal count in cells in six cases, a slight increase in five cases, and was not examined in two cases. In both groups the preliminary results were excellent; the blood and gland juice became and remained negative, there was general clinical improvement, and the spinal fluid remained normal, or in those cases in which it was slightly changed before treatment tended to become normal.

Finally, 35 patients whose spinal fluid showed that the disease had involved the cerebrospinal system were treated with repeated doses of tryparsamide intravenously. Two of these patients deserted after the first dose, two were practically moribund on admittance and three others were under observation for such a short time that they are not included in the records. The author divides the remainder into two groups; 18 who had not been previously treated and 10 who had been treated before. The spinal fluid examined before the administration of tryparsamide showed from 15 to 572 lymphocytes

per cmm., together with large mononuclear and mulberry cells. Most of the patients exhibited pronounced signs of nervous and mental symptoms and were anaemic and debilitated. In most instances the patients were under observation for a sufficient time to permit of subsequent lumbar punctures as well as other clinical examination. As in the previous cases, there was immediate peripheral sterilization, and repeated examination of lymph juice and blood films made during the period of observation was negative in all cases. In general, the physical status of the patients was materially benefited. The early termination of the treatment in three cases was followed by a clinical exacerbation and death. The nervous and mental symptoms which were present in many instances were greatly improved or completely eliminated, except in two very advanced cases. The effect of the drug is further illustrated by the marked and rapid diminution of the cells in the spinal fluid. In general, three or four weekly doses of 3 to 5 gm. produced decreases of from 57 to 98 per cent. in an average of five weeks. Of five patients, whose treatment was limited to one such course, the cell count continued to decrease in four instances, as shown by a practically normal third examination made 9 to 12 weeks after admittance, while in one patient there was no further decrease. Sixteen patients who were given a second course of treatment showed a continued decrease of cells; three showed practically no change from the count made after the first course of treatment; in one there was a slight increase in cells; and in another, after three irregularly spaced doses, the cells had returned to practically the original count. Miss Pearce notes that the use of semi-weekly smaller doses of 2 gm. had apparently no advantage over weekly doses of 3 or 4 gm.

The only untoward symptoms noticed was dimness of vision in nine advanced cases, five of whom had received previous arsenical treatment. There was no instance of visual disturbance of any kind in the early cases or in the first stages of the cerebrospinal period of the disease or after any single dose of tryparsamide; the largest dose given was 7 gm. In the majority of cases the visual disturbance was purely transitory. Miss Pearce concludes that the occasional occurrence of visual disturbance does not constitute an objection to the use of the drug, and that doses of 3 gm. or over should not be given oftener than once a week.

Van den Branden and van Hoof, in a paper published in October, 1923, give later information regarding the fate of Miss Pearce's cases. Twenty of the 21 early cases, to whom Miss Pearce gave a single injection of the drug, were followed. Apparently, at least three more of the 21 cases relapsed after Miss Pearce left the Congo, and the authors state that the relapse period among these cases varied from 17 days to 13 months. All those who relapsed were re-treated. The total quantity of the drug administered to each of the 20 cases varied from 2 to 54 gm.; all are apparently cured, the post-treatment observation period being from six months to two years and seven months in the different cases.

Van den Branden and van Hoof then give a summary of the after history of each of the 35 advanced cases treated by Miss Pearce. Most of these patients have now been under observation for over a year after treatment, but some of them for not more than six months. As Miss Pearce herself records, three are dead, 16 exhibit—six months to more than a year after the end of treatment—a normal spinal

fluid and appear to be cured ; in three the spinal lymphocytosis has increased, in two it has remained stationary, and in the remaining 11 it has diminished appreciably, but has not become normal. The authors conclude by remarking that tryparsamide, which can be administered indifferently either into the muscle or into the veins, seems to be the most active arsenical preparation known for the treatment of sleeping sickness ; they add, however, that it causes visual disturbances in certain cases and may actually produce blindness.

LEFROU and OUZILLEAU (1922) record a few observations made with the object of ascertaining the possibility of using tryparsamide as a prophylactic cure in the bush. With this object in view, they treated five cases in Brazzaville. The spinal fluid was either normal or contained a slight excess of lymphocytes at the time of treatment ; the first patient was given 1 gm. intravenously and relapsed 25 days later ; the second was given 1 gm. subcutaneously and relapsed 84 days later ; the third was given 3 gm. intravenously, and had not relapsed in 126 days ; the fourth was given 2 gm. subcutaneously and had not relapsed a year later, and the fifth was given 2 gm. intravenously and relapsed 114 days later. The authors state that 2 gm. appears to be the maximum dose that can be given subcutaneously, and it produces a considerable local reaction ; 5 gm. produced a severe abscess. It is concluded that for the purpose in view the drug is no more useful than atoxyl.

A very valuable series of observations on the therapeutic action of tryparsamide was published by CHESTERMAN in 1923 and 1924. The work, which was done at Yakusu, near Stanleyville, Belgian Congo, between the months of August, 1921, and September, 1922, was undertaken to test the results of repeated administration of large doses at weekly intervals by the intravenous route with the object of rendering normal the cell count of the spinal fluid of the most advanced cases. The 40 cases reported upon were chosen from among the over 300 cases diagnosed during the period because : (1) The source of their injection was known ; (2) they showed definite symptoms of nervous involvement and altered spinal fluid ; and (3) they consented to remain in the lazaret, where there was no possibility of reinfection. The cases comprised men, women and children. Many had to be carried to hospital in the first instance, and others had for some time given up their work on account of the disease.

In 31 cases the diagnosis was confirmed by finding trypanosomes in the gland juice, blood and spinal fluid and in nine by the discovery of a pathological increase in the cell count of the spinal fluid. A course of eight weekly injections of 3 gm. of tryparsamide was regarded as the normal, but in some cases this had to be modified on account of the development of visual disturbance. The cerebrospinal fluid was examined, except in very few instances, before treatment, and also at various intervals after treatment. The patients are considered in three groups : (A) Containing 24 cases who had received no previous treatment ; (B) containing 10 cases who had previously received varying amounts of atoxyl, tartar emetic, etc. ; and (C) containing six cases previously treated by the intrathecal serum method. All the data concerning the individual cases comprising the three groups are admirably set forth in tables, and in his second paper, published in 1924, CHESTERMAN gives the later history of the cases in such a manner as to be followed easily by the reader.

In the Group A cases the examination of the spinal fluid, made before treatment in all but three of the 24 cases, showed a great increase in the cell count in all instances (110 to 2,000 per cmm.) and, in addition, trypanosomes were found in seven cases. In five of the cases an obviously excellent clinical condition was confirmed by the discovery of a normal cerebrospinal fluid 22 to 29 months after treatment; one case seen by the author on itineration was in excellent health; one case also in good condition had a negative blood after 20 months, but his spinal fluid still contained 12 cells per cmm., and it is possible he may relapse; two cases are reported by a white colleague to be alive and well, and 14 cases are classed as *uncured.* Of these *uncured* cases five are referred to as *non-cures* in so far as after the first course of tryparsamide the spinal fluid was still not normal; three of these, however, received only 1 gm. and 2 gm. weekly doses, which are probably too small. The remaining nine uncured cases are those who relapsed. A single course of treatment, which in many of the 24 cases was undoubtedly inadequate, has thus resulted, after approximately two years' average observation, in nine (37·5 per cent.) apparent cures, five (21 per cent.) non-cures (two dead), nine (37·5 per cent.) relapsed, three (12 per cent.) dead, and one (4 per cent.) untraced.

The 10 cases comprising Group B had, at the time of treatment with tryparsamide, ceased to receive any benefit from the previous injections of atoxyl, tartar emetic, etc. The immediate clinical improvement was hardly less striking than in the previous group, but the later report shows—as was indeed predicted in the earlier report—that seven of the 10 relapsed, and four have died. CHESTERMAN says that this is not surprising in view of the production in most cases, by the previous treatment, of arsenic resistant strains of trypanosomes; moreover, in most of the seven, it was impossible to give an adequate course of tryparsamide. In the remaining three cases the result is very encouraging; one case who had previously had 10·6 gm. of atoxyl without much benefit, and with slight visual impairment, and who showed 250 cells per cmm. of spinal fluid before the 8 gm. course of tryparsamide was given, was apparently perfectly well with a normal spinal fluid 30 months later; the second and third cases in all respects were very similar to the above, and likewise in perfect health with a normal spinal fluid 28 and 22 months after courses of 24 gm. and 20 gm. of tryparsamide respectively.

Of the six cases comprising Group C two died shortly after the intrathecal serum treatment before tryparsamide could be given. Three of the four surviving cases are in excellent health two years after treatment, and the spinal fluid in two of them has returned to normal, and in the others almost to normal; the fourth case has relapsed, as is shown by the presence of 160 cells per cmm. in the spinal fluid.

The general result of these careful observations shows that 15 (40·5 per cent.) of 37 patients (one of the original 40 having disappeared and two having died before treatment) have remained well without relapse for an average period of two years after a single course of tryparsamide. Without exception all exhibited marked signs of involvement of the central nervous system confirmed by an average cell content of the cerebrospinal fluid before treatment of 630 cells per cmm. and the detection of trypanosomes there in seven cases. Two or three were unable to walk, one was incontinent, and

all had long passed the stage when any hope of a cure could be entertained from atoxyl or other drugs. CHESTERMAN believes that the failures are, in many instances, due to faulty or insufficient dosage; he is convinced that the curative power of tryparsamide in nervous infections is superior to that of "Bayer 205."

LETONTURIER, DE MARQUEISSAC and JAMOT (1924) have tested the action of tryparsamide on 14 cases of sleeping sickness in the Cameroons. One of the cases was in the first stage of the disease, three at the commencement of the second stage, six definitely in the second stage, three in the third stage, and one case was demented. The drug was given subcutaneously in a dose of ·04 gm. per kilo. every six or seven days until from 10 to 21·5 gm. had been administered; owing to the limited quantity of the drug available only a single course of treatment was given to each case. A detailed history is given in each instance. The first case, in whom the cerebrospinal fluid was normal, received between February 5 and March 13, 1924, 13 gm. of tryparsamide; the immediate result was excellent, but he relapsed on March 19, 1924. Of the three cases in the early second stage in whom the cerebrospinal fluid contained from six to 32 cells per cmm., and who received 15·5 to 19 gm. of the drug, all were greatly benefited, and subsequent examination of the spinal fluid made a few weeks after treatment showed a normal or diminished cell count. The six cases definitely in the second stage received from 14·5 to 21·5 gm. of tryparsamide, and all were greatly benefited, the cells in the spinal fluid, which before treatment varied from 53 in one case to 334-848 in the other five, fell within a few weeks of cessation of treatment to from 12·4 to 48 per cmm. In the last four cases, who were all very advanced, no spinal puncture was made, but all improved greatly. Only two of this series of cases had relapsed at the time of writing, but as this was but a month or two after cessation of treatment, nothing can be said on the point.

Conclusions.

In light of the information which is summarized above, it appears to the reviewer that it is now possible to draw certain definite conclusions regarding the relative values of the two drugs and to indicate broadly what is to be expected of them:—

(1) All observers are agreed that both drugs produce immediate peripheral sterilization in infections due to *T. gambiense*, not only in early cases, but also in advanced cases with pronounced nervous symptoms. KLEINE & FISCHER's Rhodesian cases and the European Cases 2 and 14 (Table I) indicate that "Bayer 205" likewise produces immediate peripheral sterilization in patients in all stages of *T. rhodesiense* infection. Unfortunately, no information is as yet available regarding the action of tryparsamide on the latter infection.

(2) The peripheral sterilization is accompanied by definite physical improvement. This is produced by both drugs in practically all early cases of *T. gambiense* infections, and even in many advanced cases with marked nervous symptoms; and the evidence of KLEINE and FISCHER shows that a similar result is produced by "Bayer 205" in patients suffering from all stages of *T. rhodesiense* infection.

(3) A single short course of two or three injections of either drug may produce, in early *T. gambiense* infections, a peripheral sterilization so prolonged as to suggest permanent cure. The European Case 2 (Table I) and the fact that five of KLEINE and FISCHER's 35 Rhodesian

cases are alive and well and apparently free from infection about two years after treatment indicate that a few grammes of "Bayer 205" may similarly produce permanent cures in a proportion of *T. rhodesiense* infections.

(4) There is practically unanimity of opinion that "Bayer 205" in no way influences the meningeal reaction. MENK (1923) examined the cerebrospinal fluid of a case of trypanosomiasis 36 hours after the last of three intravenous injections—the first of 0·5 gm. and the other two of 1 gm.—of "Bayer 205" given on successive days, but failed by the biological test to detect any evidence of the presence of the drug. The excellent papers of VAN DEN BRANDEN and VAN HOOF, and of CHESTERMAN, show clearly that in *T. gambiense* infections of the second stage "Bayer 205" does not diminish the lymphocytosis or albumose content in the cerebrospinal fluid, but that on the contrary these changes continue in spite of the drug and the disease proceeds to a fatal termination. The record of KLEINE and FISCHER that three months after commencement of treatment lumbar puncture revealed the presence of trypanosomes in the cerebrospinal fluid of eight of 21 Rhodesian patients indicates that the same is true of *T. rhodesiense* infections, and this is further confirmed by KINGHORN's observations that in less than two years 30 of KLEINE and FISCHER's 35 patients, who were for the most part advanced cases at the time of treatment, had died.

The observations recorded by TANON and JAMOT (1924) and by VAN DEN BRANDEN and VAN HOOF (1924) show that intrathecal administration of "Bayer 205" to patients in the second stage of the disease is not only useless, but highly dangerous, and that death may speedily follow such small doses as ·25 to ·3 gm. The latter authors have also shown that although intrathecal administration of the patient's serum withdrawn shortly after the intravenous injection of "Bayer 205" is harmless, it is of no therapeutic value.

(5) There is, however, equally convincing evidence that tryparsamide exerts a profound influence on the meningeal reaction in *T. gambiense* infections. Firstly, there is the series of 35 advanced cases treated by Miss PEARCE with repeated doses of tryparsamide. Examination of the spinal fluid of these cases before treatment showed 15 to 572 lymphocytes per cmm. together with large mononuclear and mulberry cells. The later history of the cases is given by VAN DEN BRANDEN and VAN HOOF, who, writing at a time when most of them had been under observation for more than a year after treatment, record that three are dead, in three the spinal lymphocytosis has increased, in two it has remained stationary, in 11 it has diminished appreciably, but has not become normal, and in 16 it has become normal. Secondly, there is the equally striking series of cases recorded by CHESTERMAN (1923-24), which shows that of 37 advanced cases, all of whom had pathological cerebrospinal fluids (as indicated by an average cell count of 630 lymphocytes per cmm.) before treatment, 15 have remained well without relapse for an average period of two years after a single course of tryparsamide. Finally, corroborative evidence of a like nature is found in the paper of LETONTURIER, DE MARQUEISSAC and JAMOT (1924).

(6) Both drugs must be used with caution or serious results may ensue. "Bayer 205" unfortunately produces nephritis, which may be fatal, as in the case recorded by STONES, where acute nephritis, accompanied by suppression of urine, followed the administration

of only 3·5 gm. of the drug in four doses over a period of six weeks, and in the two cases recorded by CHESTERMAN who died of acute nephritis after having received, respectively, only five and 10 weekly doses each of 1 gm. On the other hand, many cases tolerate quite well, with only slight albuminuria, 10 or 12 weekly doses of 1 gm. each. Apparently the main, or for practical purposes the only, danger of tryparsamide is that it may cause visual disturbances, and in certain cases complete blindness.

(7) The general conclusion appears to be that, apart from its peripheral sterilizing action and the immediate physical improvement which it produced, " Bayer 205 " is useless in advanced cases of either *T. gambiense* or *T. rhodesiense* infections, in so far as it has no effect on the cerebrospinal infections and the disease proceeds to a fatal issue. For this class of case tryparsamide should undoubtedly be employed : unfortunately, no information is as yet available regarding its action on *T. rhodesiense* infection, but in advanced *T. gambiense* cases its effect is remarkable in that it has been definitely shown to exert a beneficial action on the pathological cerebrospinal system which is without parallel in the therapy of this disease.

In the treatment of early *T. gambiense* infections both drugs appear to be very valuable, and it is as yet too early to draw any inferences which might guide us in deciding which should be used in any particular case. Possibly the previous history of the case may afford some indication ; if the patient has already received a considerable quantity of arsenic " Bayer 205 " may prove more useful and less dangerous than tryparsamide, but evidence on this and other similar considerations is still to be obtained. Moreover, one must bear in mind that the renal changes produced by " Bayer 205 " may be a counter-indication to its indiscriminate use in combination with, or immediately before or after, courses of arsenical treatment ; a certain amount of evidence in respect of this is found in the literature. Similarly, tryparsamide is more likely to produce ocular disturbance in cases previously treated with arsenicals, and there is evidence that its action in such cases is not so satisfactory as in previously untreated cases.

Finally, there is evidence that " Bayer 205 " may effect a cure in cases of *T. rhodesiense* infection in the first stage not only in previously untreated cases, but also in cases which have previously received without avail large quantities of arsenic and antimony.

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MISCELLANEOUS.

CALCUTTA. **Annual Report of the Calcutta School of Tropical Medicine, Institute of Hygiene and the Carmichael Hospital for Tropical Diseases for the Year 1924.** [MEGAW (J. W. D.), Director.] —pp. iii+92. With 19 figs. on 5 plates. Calcutta: Bengal Govt. Press. [For official use only.]

This Report contains a general review of the progress and policy of the School, by the Director, and 17 departmental reports by the several Professors and Researchers. It is replete with interest, though, of course, much of the result of the year's work, summarily reported, has already been fully published, mainly in the *Indian Medical Gazette* and *Indian Journal of Medical Research.* A list and titles of 48 such papers is included in the Report.

The chief adjuncts to the School during the year are an X-ray Department and a Pasteur Institute. Both of these have been at work for six months, and in the Pasteur Institute 1,461 cases were treated, of which 27 per cent. were jackal-bites, rabid jackals being extremely common in Eastern Bengal.

The most interesting item of the report of the *Kala Azar Research Department* is the story of the entomological survey that disclosed the fact that the kala azar parasite can transform into the flagellate phase in the fore and midgut of *Phlebotomus argentipes* after the insect has sucked the blood of sufferers from the disease. The survey included two districts of Calcutta, of which one is known to be an endemic focus of the disease and the other to be practically free from it, although patients brought from places up country for treatment had dwelt there from time to time. And here another interesting riddle was confronted: *Phlebotomus argentipes* was found in both districts where domestic animals (fowls, ducks, goats, cows) are kept and bare soil containing admixture of their faecal matter affords good breeding-ground. A possible explanation, based on certain facts of observation and experiment as to a particular preference shown by *P. argentipes* for bovine blood, is that the "non-endemic" area is inhabited by Hindu who keep only cows, whereas the domestic animals of the endemic area are ducks and fowls which do not thus divert the insect from man. In the treatment of kala azar, reports of good results with "Heyden 471" are continued, and encouraging prospects are reported from a limited experience of "Heyden 693" and Wellcome "stibamine glucoside." The number of in-patients treated during the year was 263, and of out-patients 16,833.

Great activity is reported by the *Hookworm Research Department,* much of it being of a confirmatory kind. Thus the passage of hookworm eggs unharmed through dogs and pigs, which, like many other animals (both domestic and wild) are steady consumers of the Indian village faeces, is confirmed. The superiority of carbon tetrachloride to oil of chenopodium for Necator is confirmed, and its great efficacy for threadworm and considerable value for Ascaris, also its uselessness against Trichuris, Strongyloides, and Tapeworm. Good work has been done in teaching doctors from tea-gardens, jute-mills, asylums, etc., the methods of diagnosis and treatment of ancylostomiasis.

The standard treatment here adopted is 70 minims of carbon tetrachloride emulsified in skimmed milk, followed in two hours by an ounce of saturated solution of magnesium sulphate.

The Report on *Research in Bowel Diseases* deals chiefly with cholera. Attention is drawn to the diagnostic value of "necrosed epithelial cells of the intestinal mucous membrane for which the cholera poison has a sort of selective action," in the stools, as being much more obvious to the search as well as more persistent in the stools than vibrions; also to cases of para-cholera of a benign type, in which "cholera-like vibrios" were found in the stools. Oral vaccination against dysentery was found not to elicit such a pronounced protective response as oral vaccination against cholera.

In the Report of the *Leprosy Research Department* treatment comes first. Undistilled esters, washed with weak alkali and dried, were found to be considerably less painful, cheaper, and probably more effective than distilled esters; undistilled hydnocarpus esters to be preferable to morrhuate esters; and pure oil of *Hydnocarpus wightiana* (from Ernakulum)to be less painful than esters of the same oil. Thymol, either by mouth or in oily injection, has been found useless, except when given dissolved in hydnocarpus esters. According to the experience of the outdoor leprosy clinic leprosy can be diagnosed without difficulty in the early stages, and when so diagnosed and thoroughly treated can be checked and—as far as any obvious signs go—cured, provided the patient maintains his natural resistance and his freedom from predisposing causes. The relation of leprosy to syphilis has been further investigated, the importance of preliminary anti-syphilitic treatment for all lepers giving the Bordet-Wasserman reaction being emphasized.

The work of the *Diabetes Research Department* on tests for recognizing the pre-diabetic stage, and on deterioration of insulin in the tropics, has already been noticed. Clinical experience with crude extract of telakucha (*Cephalandra indica*) has been "quite unsatisfactory" for the treatment of the disease.

In the Report on *Filariasis Research* the wide prevalence of the disease in Bengal is again noticed. Of 350 mosquitoes caught in human dwellings in different parts of Calcutta 2 per cent. (all "culicines") were found naturally infected.

In the *Public Health* laboratories the problems studied have been the working of various types of filters, the bacterial contents of condensed milk and tinned foods, the bacteriology of tube-wells, the preparation of neutral soap, and the detection of adulterations in *ghi*.

In the *Chemistry Department*, besides analysis of drugs (including indigenous drugs), a good deal of work was done in connection with the therapeutic study of leprosy, beriberi, and cinchona.

In the Report on *Tropical Medicine* interesting items to note are (1) the progress of a survey of the distribution of diseases, and (2) the fact that in the physician's wards in the hospital annexe every patient, whatsoever his disease, undergoes a routine of standard tests for evidence of past or latent infections. In the application of this routine overlooked syphilis, of course, is very commonly revealed, and the Widal routine has indicated that a large proportion of the population of Bengal has probably suffered from typhoid fever in childhood, and [? or] that Widal tests as ordinarily carried out are not satisfactory evidence that a fever is really typhoid.

The Report that includes *Pathology* contains, besides résumés of papers dealing largely with the endocrine defence already published (and already noticed in this *Bulletin*), a survey of over 2,000 cases of disease of the skin, most of them common enough. Thirteen per cent. were leprosy, and Major ACTON emphasizes the necessity of teaching the practitioner to recognize these skin lesions that occur in the initial stages when the cure of leprosy is possible. Attention is drawn to thyroid deficiency and other components of the endocrine defence as contributory factors in certain forms of skin disease.

The Report of the *Protozoologist*, Major KNOWLES, overflows with interest. Systematic routine studies—that certain method of what the immortal MANSON called "stumbling on a fact with a distinct bearing on human pathology"—have been maintained not only in malaria and amoebic dysentery, but also on the protozoa of local rats and, generally, on the mammals and birds dying in the Calcutta Zoological Gardens. In the studies of kala azar (1) the thick film method now practised has given positive disclosures in 67 per cent. of the Calcutta cases (against 19 per cent. in thin films); (2) the search for a laboratory animal susceptible to experimental infection—particularly monkeys deprived of the thyroid gland—has given merely a glimmering of hope; and (3) "brilliant green" has proved so toxic to animals as to preclude its use for man. In the treatment of amoebic dysentery (1) stovarsol—4½ gr., with food, twice daily, for a term of 10 days—has accomplished what appears to be an "absolute cure" in the five cases (of which three had long resisted emetine) in which it was tested; and (2) extract of kurchi bark, 60 gr. daily, was followed rapidly by the disappearance of two acute infections in which it was tested. Among other matters Major Knowles reports (1) an exhaustive, but unsuccessful, search for an associated organism in two cases of infantile cirrhosis of the liver, (2) the detection of leptospira-like artifacts in the blood of two cases of blackwater fever, and (3) a case of rat-bite fever in a European, in which *Spirillum minus* was isolated.

Major CHOPRA'S *Pharmacology* Report is extremely interesting. The study of indigenous drugs has been continued, and in collaboration with Major ACTON some stimulating investigations of the arcana of pharmacological processes has been carried on.

The Report of the Professor of *Serology* is prolific in practical interest. The practical value of blood-grouping in transfusion, the value of specific precipitin antisera in the precise identification of the stomach-contents of blood-sucking insects, and the detection and treatment of syphilis as an essential preliminary to the treatment of leprosy are among the subjects included. A great deal of experimental work has been carried on in respect of the value of the Wassermann test in malaria, and on flocculation syphilis tests.

The concluding Report, on *Medical Entomology*, consists of a summary of a large amount of varied work, including, among other things, observations on malaria in the Naga hills, malaria surveys and anti-malaria operations on tea-gardens, the action of larvicides, the pathogenic implications of ticks, the vesicant properties of certain insects, the herpetomonads of Lucilia, and observations on certain species of Anopheles.

A. Alcock.

ROSENAU (M. J.). **The Seasonal Prevalence of Disease.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 28–55. [16 refs.] [United Fruit Company, Boston, Mass.]

A formal paper on seasonal prevalence of disease—a subject at present so unripe in itself and so insufficient in its statistical roots—must be either trite and destitute of interest or—if, as in the present case, it deals with intricacies of causation—discursive, and its interest, which will be mainly suggestive and stimulative, must considerably evaporate in the process of abridgment. One valuable general statement, however, may be quoted in full, namely that "Generalizations concerning seasonal prevalence are hazardous, for each particular infection has its own vagaries. Each disease must be studied in and out of season. Its prevalence may then be correlated with other factors in order to get a true epidemiological picture."

The paper opens with some instances of periodicity of epidemics. Such as BROWNLEE's observation of recurring waves of influenza at intervals of 33 weeks provided the 33rd week does not fall between June and December—or, if it do so fall, then in multiples of 33 weeks: the exacerbations of measles every 2 or 3 years: the tendency, in Massachusetts, to an excessive prevalence of infantile paralysis every 4th season: the "irregular periodicity" of epidemics of plague in London between 1563 and 1680.

Going on to seasonal prevalence of disease, the author illustrates the obvious insufficiency of an explanation that attributes it to the direct effect of weather and climate. Measles, influenza, and smallpox do not wait for cold weather when introduced among a susceptible population. Some contact diseases prevalent in temperate climates tend to die out if introduced into the tropics; but others, such as common colds, influenza, pneumonia, and tuberculosis, do not.

The author classes diseases according to seasonal prevalence in three groups—insect borne, intestinal, and respiratory—[a pardonable cross-classification in a subject so full of elusion and confusion]. Insect-borne diseases naturally prevail during the summer season. Typhus is an exception [not as the author opines because lice are any less common in the tropics and warm weather than in temperate regions and cold weather, but rather, one may suppose, because the louse is a specifically adapted parasite and its unvarying "climate" is supplied by its specific host]. The winter malaria of Russia in recent years is another exception, since in a warm hut inhabited by Russians and provided with a water-butt Anopheles is independent of vicissitudes of climate.

Intestinal diseases—typhoid fever, cholera, dysentery and the summer diarrhoea of infants—obviously have the same seasonal prevalence as insect-borne diseases. The only reason for separating them from the latter is that cholera and typhoid and dysentery may also be water-borne, and therefore are not restricted to summer.

Diseases of the respiratory tract are commonly attributed either directly to seasons of cold and changeable weather, or—being diseases that are supposed to be spread by contact through emanations from the mouth and nose—to the crowding that commonly occurs in such weather. But neither of these explanations will be found to be sufficient.

In the discussion of the causes of seasonal influence the author quotes WEBSTER to the effect that the equilibrium of an infectious

disease in a given community is determined by "microbe distribution," "microbe virulence," and "host susceptibility." In his own language the amount of disease in a community naturally depends upon the amount of virus and the facilities for its distribution under favouring influences. Dosage—with which, of course, the question of virulence is implicated—is also an important factor. The influence of symbiotic associations of microbes must also be considered, particularly when it is remembered that common colds increase the number of pneumococci in the mouth and that scarlet fever seems to cause an increase of diphtheria bacilli in the throat.

As regards virulence, a number of diseases—yellow fever, smallpox, scarlet fever, infantile paralysis—show remarkable differences in severity at different times and places. In a study of 38 different epidemics of infantile paralysis occurring between 1894 and 1921 in different parts of the world—a total of 20,568 cases—AYCOCK and EATON found the case-fatality (averaging 20·8 per cent.) to range from a maximum of 30·7 per cent. to a minimum of 5 per cent., and to be rather higher in cold weather than in summer. (But here the want of perfection and the inequality of returns have to be remembered.)

Many diseases appear to follow the temperature curve so closely as to suggest a direct causal nexus between temperature and seasonal prevalence. Pneumonia is one of them, yet there is little of it among natives of the Arctic regions unless when they come to lower latitudes, and then they are especially susceptible; and again pneumonia is one of the principal causes of death among labourers on the fruit plantations of Central America. Influenza when carried to Greenland caused mortal havoc there, yet epidemics of it are frequent in the tropics. Scarlet fever, indeed, is usually high in the cold cities of America and almost unknown in the Panama Canal Zone; but measles though most prevalent in cold weather also occurs in warm countries, and diphtheria is prevalent both in cold and in warm regions.

High death-rates in spring may be a consequence of loss of resistance after the strain of winter. VAUGHAN suggests that it is not so much the cold of winter that affects us adversely as the way we defy the rules of hygiene and live in overheated buildings during that season. Physiologically, cold is invigorating and heat is depressing.

Besides temperature the potent effects of sunshine have to be considered. This influence is familiar in tuberculosis and in rickets. How insidious it may be is suggested by the fact that there are certain substances in buckwheat which are harmful to animals exposed to sunshine, but not when the animal is kept in the dark.

The effects of humidity one hardly needs to be reminded of, but how secretly and indirectly variations of atmospheric moisture may act is illustrated among the classical experiments made upon ALEXIS ST. MARTIN by BEAUMONT, who observed that a dry atmosphere increased and a humid atmosphere reduced the temperature of the stomach.

On the analogy of the hibernation and the rutting season of animals there is a number of physiological rhythms to be considered in our speculations on seasonal prevalence of a disease. Thus there are many insidious seasonal variations of metabolism, such as quicker growth of hair at certain seasons, and heightened capacity of the blood to fix CO_2 in the season of short days; seasonal variations in the size and weight of viscera, studied by BROWN, PEARCE, and VAN ALLEN; seasonal variations in the endocrine equilibrium, such as

the hyperthyroidism said to occur in spring and autumn; subtle seasonal influences of diet, such as the heightened susceptibility of mice to certain poisons in the spring, and the spring outbreaks of pellagra following an unbalanced diet during winter; and the absence or diminution of antiscorbutic vitamin in the milk of stall-fed cattle in winter.

To sum up: in speculating on the seasonal prevalence of disease we have to keep in mind not only temperature, rainfall, air-currents, and sunshine, and variations in the virulence of a microbe, but also seasonal variations in resistance, manifold normal seasonal fluctuations of a physiological nature, seasonal changes in environment and diet.

In the discussion on the paper Sir A. NEWSHOLME referred to non-conformity of seasonal incidence of typhoid fever in different States of the U.S.A., compared with its uniformity in Europe; and to the definite correlation observed by LONGSTAFF between a succession of dry years and an excessive amount of erysipelas and scarlet fever and acute rheumatism. Dr. KOFOID reminded the audience that the cosmic forces which determine temperature, rainfall and access of solar radiation are correlated in an infinite variety of ways not only with the phenomena of seasonal incidence of disease but with the entire panorama of plant and animal life. Major DUNHAM referred to remarkable differences in the incidence of measles observed in concentration camps of different civic complexion. And Dr. F. L. HOFFMAN referred to the effects of coincident high temperature and high humidity on the incidence of infantine diarrhoea.

A. A.

CASTELLANI (Aldo). **Haemorrhagic Bronchites of Non-Tubercular Origin.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 857–901. With 17 figs. [85 refs.] [United Fruit Company, Boston, Mass.]

In this long paper the author systematizes his labours on bronchial inflammation of parasitic origin independent of the tubercle bacillus. He defines and characterizes broncho-spirochaetosis, broncho-amoebiasis, broncho-paragonimiasis, and twenty different specific forms of broncho-mycosis, each named from its corresponding fungus. The history of his discovery of broncho-spirochaetosis is given at some length and with illustrative cases. Clinical illustrations of broncho-nocardiasis and broncho-moniliasis also are given. The author emphasizes the practical importance of the differential diagnosis of all these different kinds of bronchitis, since they are generally mistaken for tuberculosis, and if a timely and correct diagnosis be made they are amenable to treatment.

A discussion followed in the course of which Dr. FACIO described a case of broncho-spirochaetosis, in which the distressing symptoms of bronchitis were cured by neosalvarsan, although spirochaetes could be found in the sputum two months afterwards. Colonel ASHFORD related a case of broncho-moniliasis, with pulmonary abscess and pus that gave an almost pure culture of monilia, which was rapidly cured as soon as the patient was treated with monilia vaccines. Dr. CLARK, although anxious not to be understood as impugning the occurrence of primary bronchomycoses, had himself not seen that condition unassociated with tuberculosis. Sir T. OLIVER questioned whether the bronchitis is primary or secondary. He referred to the

fact that if finely divided aluminium ore be injected into an animal, intravenâ, phagocytes loaded with the particles can be observed passing from the pulmonary capillaries into the alveoli and thence into bronchioles, where they accumulate along with mucus as in a secondary bronchitis. In concluding the discussion the author considered it to be most important to distinguish between primary and secondary broncho-moniliasis: in the primary form the isolated monilia will be virulent to a rabbit when injected intravenâ, and will produce a characteristic nodulation of the lungs when injected there.

A. A.

BEECHE (Luciano). **Tropical Diseases of Costa Rica.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 573–580. [United Fruit Company, Boston, Mass.]

Prior to the year 1900, the author writes, the year in which the United Fruit Company fully organized its operations in Costa Rica, the Atlantic Coast and its natural outlet, Port Limon, were an immense swamp, where yellow fever and malaria destroyed hundreds of people year after year. Thanks to the Company, "the former dominions of death have been gradually converted into centres of activity and life." Yellow fever afflicted the Pacific littoral till 1903; since 1910 the disease has not occurred in the country. Malaria tends to increase. In 1914-18 it killed 3·14 per mille; in 1919-23, 4·89. The increase is attributed to the bad state of the privies built under the instruction of the Department of Ankylostomiasis. Blackwater exists in the most malarial districts. Sprue is found in the entire country, but especially in the cities: brilliant results in treatment have been obtained by the elimination from the diet of starches and sugars. Dysentery, chiefly amoebic, is endemic. Half the population is affected by hookworm. There are 40 cases of leprosy in the lazaretto. Some account is given of the sanitary organization.

A. G. B.

MÜHLENS (P.). **Short Remarks about some Tropical Diseases in Argentine.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 547–552. [United Fruit Company, Boston, Mass.]

In April, May and June the author, with three Argentine doctors, studied the diseases in the provinces of Tucuman, Salta and Jujuy, in the north of the Argentine Republic. Blood preparations from 7,000 persons were examined, and of 7,024 slides (thick film), 2,331 were positive.

800	(34·3 per cent.)	were	*Pl. vivax.*
580	(24·9 ,, ,,)	,,	*Pl. malariae.*
871	(37·4 ,, ,,)	,,	*Pl. falciparum.*
80	(3·4 ,, ,,)	,,	Mixed.

P. falciparum was found in high percentage up to 1,200 metres. The chief carrier seems to be the widespread *Anopheles pseudopunctipennis.* A "large number" of persons had splenomegaly, but blood parasites could not be demonstrated.

Microfilariae were found in the same area, in some regions up to 48 per cent. of cases examined, and also among Bolivians, but the author could not make out a definite clinical picture of disease. It

has no periodicity, and is either *Mf. demarquayi*, or a new parasite [see this *Bulletin*, Vol. 10, p. 122]. Of 219 cases studied, more than half were in children under 15.

Two cases of infection with *Schizotrypanum cruzi* were seen in Tucuman and Jujuy; Triatoma is numerous and goitre and cretinism are not rare; in some places 40 per cent. of people were goitrous. KRAUS and ROSENBUSCH were unable to find any human cases of trypanosomiasis [*loc. cit.*, Vol. 11, p. 166]. In the first case, a child of 5 months, numerous trypanosomes were seen in thick blood films on three occasions. Quinine was given for malaria and thereafter parasites were not demonstrable, and inoculation of animals was negative. The second case was in a child of about eight years. Here the parasites were sparse, about one to a film. After ten days' negative examinations, a mouse was successfully inoculated with 1 cc. of blood. Four *Triatoma infestans* taken from the house of the first case infected a guineapig on which they fed. The first child had a chain of symptoms which might have been due in part to malaria. In the second there was no apparent deviation from health, except that the spleen and cervical glands were slightly enlarged.

Other diseases seen and briefly mentioned were cutaneous leishmaniasis, espundia, mal de caderas, typhus, granuloma venereum, leprosy, plague, amoebic dysentery, ankylostomiasis, and some cosmopolitan affections.

Dr. CARTER remarked that in California and in Panama *A. pseudopunctipennis* is not an efficient carrier of malaria.

A. G. B.

ZUBIETA (Ernesto). **The Gorgas Memorial Institute of Tropical Medicine.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 962–969. [United Fruit Company, Boston, Mass.]

The site for the Gorgas Memorial Institute of Tropical Medicine, given by the Panama Government, is alongside the new Santo Tomas Hospital, which is now near completion at a cost of 3,000,000 dollars, and is to house 750 patients. For the perpetual endowment of the Gorgas Institute 6,000,000 dollars is being raised by public subscription in the U.S.A., and Central and South America. The functions of the Institute are to be research, post-graduate study and "the preparation and intelligent distribution of scientific literature to investigators and research workers throughout Latin-American and other countries of the world."

A. G. B.

DUNHAM (George C.). **The Work of the Medical Department, United States Army, in the Tropics.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 971–978. [United Fruit Company, Boston, Mass.]

There are two passages of general interest in this paper, one giving a fresh illustration of the effect of modern means of transport on the spread of disease. The dengue problem in the Southern States has been complicated by the rapid increase in the number of travellers by motor car. Many make long cross-country journeys, camp by the wayside, are infected with dengue by the local mosquitoes, and carry

the infection hundreds of miles further, where they infect other mosquitoes.

With the object of ascertaining whether tropical climate affects mental efficiency :—

"The Medical Department Research Board is now endeavouring to determine whether the officers serving in the Philippine Islands are affected adversely by the tropical climate. Within the last year, other boards have been appointed in Panama and in Porto Rico to study this question. It is proposed to study the comparative mental efficiency and physical health of officers while they are in the Tropics, and prior and subsequent to such service. These investigations must extend over a number of years, but it is believed that the data obtained will be of value in determining the effect of tropic residence upon mental and physical efficiency."

A. G. B.

HORN (A. E.). **Some Aspects of Tropical Medical Work.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 556–566. With 1 fig. [United Fruit Company, Boston, Mass.]

A discursive and interesting paper, in which the author ranges from malaria prevention and treatment, water supplies in the rural tropics and their protection from mosquitoes, to yellow fever in West Africa. Incidentally, he calls attention to the value for subsoil drainage of perforated cigarette and milk tins placed end to end or waste sheets of corrugated iron arched and buried end to end where a costly scheme is inadmissible, such expedients having the added merit that they dispose of useless rubbish, which itself may be the means of mosquito breeding. FLETCHER's unfortunate results with intrarectal quinine are described at some length [but NEWHAM's long experience to the contrary is not mentioned (this *Bulletin*, Vol. 20, p. 970–1)]. The author describes and figures his anti-mosquito device for rain-water tanks or casks [*Supplement* No. 3, 1924, p. 181]. In the long discussion which followed LE PRINCE drew attention to the value of a horse for demonstration of Anopheles, where householders are sceptical as to their presence, to the repellent effect on Anopheles of a certain high candle power of light, to the value of swatting, and to the increased duration of screening when Monel metal is used in preference to copper bronze. Both paper and discussion should be read.

A. G. B.

DEEKS (W. E.). **Activities of the Medical Department of the United Fruit Company.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 1006–1010. [United Fruit Company, Boston, Mass.]

Dr. Deeks tells the story of the development of the Medical Department of the United Fruit Company. As he writes, "the record of industrial progress in the Tropics is really the record of medical and sanitary progress, for agricultural development and commercial activity on a large scale are impossible until medical science brings tropical disease under control, and sanitation transforms pestilential areas into healthy localities." For this reason a Medical Department was created on the incorporation of the Company in 1899, and to this its commercial success is largely due. Its plantations cover 2,000,000 acres of land, and it owns or leases 3,000 square miles. It employs

about 67,000 persons, and no less than 150,000 are dependent upon it for medical service. It has eight large modern hospitals, handling 28,000 patients yearly, while ten times as many are treated at its dispensaries. The quarters of the employees are modern and are under constant sanitary supervision. It has built and maintains schools, churches and places of entertainment and recreation, as well as merchandise departments, hotels, laundries, and even ports with docks and warehouses. The annual expenses of the Medical Department are about a million dollars, and half that sum in addition is spent on sanitation. It maintains a free Radio-Medical Consulting Service, used by merchant ships. The Company operates a fleet of 80 steamers, specially built and designed for tropical service; all are rat-proofed and kept in a sanitary condition under the supervision of the Medical Department. The work offers unusual opportunities for the study of tropical problems and scientific workers are welcome. Desire for efficiency prompted the Medical Conference in the Proceedings of which this paper is published.

A. G. B.

HOFFMAN (Frederick L.). **The Problems of Mortality and Acclimatization in the Central American Tropics.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 657–678. [United Fruit Company, Boston, Mass.]

By the Central American Tropics the author means the West Indies and the north coast of South America. His standpoint is shown at once in the statement: "The enormous improvement in the health of our southern states during the last generation bears evidence to the truth of the theory that the earth, as modified by human action, can be made habitable and useful for the needs of man when necessity requires, wherever that region may be located, be it in the sub-Tropics, the Tropics, or, for that matter, in the sub-Arctic or the Arctic." He draws attention to the neglect of the study, by modern methods, of the disease-predisposition of races. He gives statistics of the personnel and medical activities of the United Fruit Company for 1923, including the causes of death of white employees, and tabular statements of the incidence of malaria and dysentery over a series of years. He notes that the cancer rate over four years is about one-fourth of that in the United States [but does not say whether the figures are corrected for age distribution]. In this connexion he seems to attribute importance to the use of canned food.

Similar figures are given for the Panama Zone, including a return which is of great interest—the causes of death of white American employees arranged with reference to age and length of residence on the isthmus between January, 1914 and December, 1923. Of the 98 deaths which occurred in this ten-year period only five were from a tropical disease, in each case malaria. This, as the author says, conclusively proves the relative infrequency of typical tropical affections. The average age at death was 46·1 years and the average length of residence 9·4 years; the longest residential periods were 35 and 23 years. "The strictly tropical affections on the Isthmus of Panama are no longer a matter of serious concern to those who adopt reasonably sanitary precautions and habits of life conducive to health and longevity." The author from his own experience and investigations feels satisfied that the attainment of normal longevity is not

difficult provided the person concerned maintains industrious habits and keeps steadily at work. The things to be avoided are—idleness, excess of intoxicating liquor, venereal disease, parasitic infections such as hookworm and malaria. He considers that the United Fruit Company is conducting a most promising experiment in tropical acclimatization. The majority of the employees are entirely satisfied with their tropical surroundings; and here it must be noted that various and close contacts with the outside world are maintained by wireless telegraphy, and those who are ill or in need of a change of climate are transported back to their homes. Finally, he thinks that medical science should attempt more precisely to define the types of mankind ill-adapted to prolonged tropical residence and continuous heat exposure.

Colonel Bailey K. ASHFORD discussed the prevalent " chronic fear " of the tropics, the incapacity for adaptation to the environment, the nostalgia, the lack of fresh food, the want of sufficient rest ; he laid special stress, as did H. R. CARTER, on the necessity for regular exercise. He believes that, given a fair sanitary service, the American tropics are less fearsome from the point of view of disease than the north.

A. G. B.

TODD (John L.). **Tropical Medicine, 1898-1924.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 17–27. [United Fruit Company, Boston, Mass.]

A stimulating address. " The history of tropical medicine from 1898 to 1924 should inspire in man a sturdy belief that concerted and organized endeavour can solve the most difficult of problems." Professor Todd believes that instruction in tropical diseases should be given to all students of medicine because of the importance of " familiarity with diseases that are definitely diagnosed by seeing their cause and are cured or prevented by destruction or circumvention of that cause " ; because a knowledge of these diseases is necessary to an alert and comprehensive understanding of human pathology ; and because the " time-size " of the world has become so small, *e.g.*, a few days may bring to hospitals in temperate climes patients from Tropical America or Africa. The Association of American Colleges has added to the medical curriculum 40 hours' instruction in medical zoology. [If " before the great war neither the cause nor method of infection of typhus was known," it only shows how slowly knowledge of such fundamental work spread at that time, for louse transmission was made known in a series of papers by NICOLLE and others from 1909 onwards (*see* NUTTALL, *Parasitology*, Vol. 10, p. 43).]

A. G. B.

MOODY (L. M.). **Some Notes on Alastrim.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 760–767. [United Fruit Company, Boston, Mass.]

An excellent paper the substance of which has been published and reviewed in this *Bulletin* (Vol. 19, p. 438). The author is disposed to regard smallpox and alastrim as distinct owing to the slight constitutional symptoms in alastrim, the character and course of the eruption and the low mortality ; moreover, the vaccination reactions and histological appearances differ. A discussion followed.

Dr. ROSENAU believes that alastrim "is no more nor less than smallpox," because "smallpox is a disease which presents mutations and variations more than any other disease we have to deal with;" the difference between alastrim and smallpox is one of degree rather than kind; in every epidemic there are extremely mild smallpox cases; since the Spanish war there has been smallpox in the U.S.A. with mortality of less than 0·5 per cent. Just so, the mortality from yellow fever may vary from 37 to 5 per cent. The main thing is that vaccination protects. A separate name serves to diminish preventive measures; he would like to abolish the word alastrim. Dr. Aristides AGRAMONTE takes the same view. He has stamped out the disease in Cuba by vaccination. Dr. William H. PARK presented the analogy of typhus in America—the endemic form, always mild, so that no serious efforts are made to eradicate it, and the imported form, very infectious, with a high mortality, frequent 30 years ago. Dr. CASTELLANI inclines to think that alastrim and smallpox differ, but Dr. Moody clinches the argument of the other side when he expresses the opinion that if alastrim had been regarded as smallpox in Jamaica it would have been stamped out long ago because of the terror that smallpox has for the people.

A. G. B.

CORREIA (Alberto Carlos Germano da Silva). **A variola em Angola.**—*Revista Méd. de Angola* (No. especial 1e Congresso de Med. Trop. da Africa Ocidental. Vol. 3. 3a. 4a. e 5a. Sessões.) 1923. Aug. No. 4. pp. 423–460. [2 refs.]

This contribution is divided into three parts. The first gives a statistical account of smallpox in Angola from the time of the very fatal epidemic in 1864, when nearly 15,000 were attacked and fully half this number died, down to recent days. Part II deals with prevention by vaccination and with arrangements for preparing the supply of lymph at a Vaccinogenic Station at Huambo. The final section details the projected personnel and arrangements to be put in force at this Station and for seeing that distribution of the lymph is maintained and that a certain reserve is always kept for epidemics and suchlike times of stress.

H. Harold Scott.

VAN HOOF. **Varioloïde et Alastrym au Stanley Pool.**—*Revista Méd. de Angola.* (No. especial 1e Congresso de Med. Trop. da Africa Ocidental. Vol. 3. 3a. 4a. e 5a. Sessoes.) 1923. Aug. No. 4. pp. 461–470. With 5 plates. [12 refs.]

The author discusses anew the question of the identity or otherwise of varioloid and alastrim. In his experience, vaccine lymph produced little, if any, immunity to alastrim. He was unable to communicate alastrim to monkeys by inoculation of the contents of pustules from a case of this disease, though success was readily obtained with vaccinia. The following experiment is of interest. Scarifications were made on various parts of the skin of a small cercopithecus. When these were nearly healed and showed merely local congestion 1 cc. of the contents of a pustule [the nature of the virus is not stated] diluted in normal saline was injected intravenously. Eight days later a typical eruption

appeared in the scarified regions. Two others similarly injected but not previously scarified yielded negative results. [Cp. LEVADITI & NICOLAU, this *Bulletin*, Vol. 20, pp. 680–681.]

The author suggests that, though perhaps not now identical, variola (or varioloid) and alastrim may have a common ancestry.

H. Harold Scott.

ROBINEAU (Marcel). **L'alastrim, quelques remarques cliniques. Ses rapports avec la variole.**—*Rev. Méd. et Hyg. Trop.* 1925. Jan.–Feb. Vol. 17. No. 1. pp. 5–12. With 6 charts. [2 refs.]

On April 14th 270 tirailleurs, recruits from the Upper Volta and French Guinea, reached Arles on the Rhone. The next day one of them presented a general eruption recalling smallpox but was not otherwise ill. The eruption had appeared a week earlier and at Marseilles he had hidden himself to escape detention. He and the rest had been successfully vaccinated 5 months before. This was the first of an epidemic of 59 cases which was closely observed by the author. The incubation period was 14 days. The early symptoms were headache, sometimes backache, and frequently a dull pain on palpation of the spleen, which, however, was not enlarged. Vesicles appeared the next day, first on the superciliary ridges, cheeks, and flanks; each was surrounded by an inflammatory zone, 1–1·5 cm. in diameter. There were sometimes pains in the course of the subcutaneous nerves like those of shingles. The temperature was 39 to 39·5°. There was often an eruption of red points on the soft palate and mucosa of the cheeks. Next day, fever, areola and general symptoms disappeared. The eruption occupied the entire body, including the hairy scalp, but vesicles were never seen on the palms and soles: the author believes they occur here only in confluent cases. Umbilication and pustulation occurred about the 7th day. Desiccation was rapid, and the blackish crusts fell after 8–10 days leaving a depigmented cicatrix. The total duration was 20–22 days.

The mildness of these cases is attributed to the recent vaccination. Two who had escaped were vaccinated on the 15th day of their disease; the reaction was slight and no lymph was formed. It is concluded that previous vaccination attenuates the virulence of the alastrim virus without conferring absolute immunity, and that the alastrim virus develops antibodies early which attenuate the vaccinal reaction. Several patients had a recrudescence of fever, seen in 2 charts, seven days from the onset, when the vesicles suppurated. That the disease is infective only at an early stage is shown by the fact that the patients were frequently found in a ward reserved for other cases, but none of these became infected, whereas it spread in the battalion though the patients were removed at once on diagnosis. Men were returned to duty as soon as the crusts had fallen.

A. G. B.

NETTER (Arnold) & URBAIN (Achille). **Déviation du complément dans la variole et l'alastrim. Relation entre les deux maladies.**—*C. R. Soc. Biol.* 1925. Apr. 3. Vol. 92. No. 12. pp. 952–954. [1 ref.]

This paper contains the details of a comparative study of the deviation of the complement in alastrim and smallpox. The alastrim serum was obtained from 19 recovered cases from an outbreak among native [colonial] troops stationed at Arles; the variola serum from 6

convalescents from a very dangerous outbreak (40 per cent. mortality) at St Malo. The serum of all these cases was tested with vaccine antigen; and in 18 cases was also tested with antigen from varicella crusts. The author's conclusions from the constancy of the results throughout are in favour of the view that alastrim and smallpox are attributable to the same origin; and that there is reason to think that the variola virus has undergone in alastrim a mutation of the same order as occurs in vaccine. "One could not affirm that this mutation must remain definitive."

A. A.

LANE (W. Arbuthnot). **The Causation of Cancer.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 744–751. [United Fruit Company, Boston, Mass.]

Part of this paper relates to the inhabitants of the tropics [what part is not stated, but the "black man" is mentioned]; with the rest we are not here concerned. A few extracts will give the author's views.

"The native only too readily imitates the universally faulty diet and habits of the white man. In consequence, he of necessity acquires the abnormal conditions and the diseases resulting from this intimate and unfortunate relationship with the white man which has been forced upon him. . . .

"Finally that dread scourge of civilization, cancer, attacks the poor black man with a frequency proportionate to the degree of his civilization . .

"Such is the appalling price the native pays for civilization. . . .

"It is absolutely certain that, owing to the perfect functioning of his stomach and intestines because of his simple diet, the native in his normal surroundings does not suffer from indigestion, appendicitis, colitis, gastric or duodenal ulcerations, or from cancer of the gastro-intestinal tract or any organ in his body; nor is he subject to the many degenerations of the several tissues and organs of the body, all of which are in effect symptoms of chronic intestinal stasis and not independent diseases.

"It is only when the vitality of the tissues is sufficiently depreciated by the poisons which are absorbed from the infected intestinal contents and are circulated through the body, that cancer is ever developed."

[The assumption that cancer is a disease of civilization is unproven (see ROGERS; SNIJDERS and STRAUB, Vol. 21, p. 906; in both of which papers there is evidence that cancer is at least as prevalent in the uncivilized Asiatic as in Europe).]

A. G. B.

WELLS (C. R.). **Betel Nut Chewing and its Effects.**—*U.S. Nav. Med. Bull.* 1925. Apr. Vol. 22. No. 4. pp. 437–439.

The author, Lieutenant, Dental Corps, U.S. Navy, describes the effects of betel nut chewing in Guam thus:—

"The soft tissues of the oral cavity, and especially the gingivae, are the parts adversely affected by betel nut chewing. . . . These changes involve at first a slight gingivitis, followed by the accumulation of heavy deposits of salivary calculus. Some pain is experienced with the early gingivitis, but this subsides without treatment and a chronic gingivitis follows. There is a gradual recession of the gingivae, with the formation of pockets, and the deposition of serumal calculus beneath the free margin of the gums and of black concretions from the betel nut on the necks of the teeth. The gums become soft and spongy, bulging about the teeth and bleeding

easily. The alveolar process soon becomes affected and breaks down, leaving ragged spicules which constantly irritate the tissues. The teeth loosen, appear to be elongated, and are sore while in use. At about this time, true pericementitis develops and the native begins to appreciate his dental troubles. . . . Finally, his pain becomes unbearable and he seeks the hospital. His teeth are now candidates for the forceps and his oral tissues require careful attention, since nearly all of the alveolar process and the peridental membrane have been destroyed."

The author finds that few confirmed chewers have carious teeth, though the natives have accepted American foods with avidity and have discarded as far as possible the coarse foods of their ancestors, but extensive caries has been seen in children who do not chew. The teeth in habitués are coated with heavy concretions, which mechanically prevent the attack of decalcifying acids and the ingress of infectious organisms, and to this or to the alkaline secretion of the mouth may be attributed the absence of caries.

The author has never observed "in the hundreds of betel nut chewers who have been treated" any evidence of cancer of the mouth, nor does he mention any changes in the buccal mucous membrane. [See this *Bulletin*, Vol. 21, pp. 327 and 909.]

A. G. B.

FISCHER (Walther). **Der Speiseröhrenkrebs bei den Chinesen und die Ätiologie dieses Krebses.** [Oesophageal Cancer in Chinese and its Etiology.]—*Klin. Woch.* 1924. Dec. 9. Vol. 3. No. 50. pp. 2288–2289.

It has been asserted as an example of irritation cancer that the Chinese men eat their rice as hot as possible, and the women later when it is cold, and that the men and not the women suffer from cancer of the oesophagus. The author has been unable to discover the grounds for this statement. His enquiries show that cancer of the oesophagus is from twice to twelve times as common in men as in women in Europe and America, that there is no evidence of excessive frequency of oesophageal cancer in China, that neither in North or South China is the male favoured in the serving of rice, and that rice is never eaten very hot. In short, he shows that the statement is without foundation.

A. G. B.

WATKINS-PITCHFORD (W.). **The Prevalence of Cancer amongst the Native Races of Natal and Zululand during the Four Years, 1906-1909. With a Note on the Nature of Cancer.**—*Med. Jl. S. Africa.* 1925. Apr. Vol. 20. No. 9. pp. 257–260. [1 ref.]

A "Cancer Research Committee" was formed in Natal in 1905. It met twice and issued two reports, the last in 1910. This is now inaccessible and is therefore embodied in the present paper. Enquiries were made of medical practitioners in Natal and Zululand, magistrates, who receive reports of death, and health officers. It is noted that whereas 25·7 per cent. of the population of England and Wales were of the age of 40 and over, only 13·7 per cent. of the natives had reached that period. In these four years there were eight fatalities from malignant disease and 19 laboratory diagnoses, a total of 27, making a death rate of 0·72 per 100,000 per annum. The author holds that

the small figure is not explained by imperfect opportunity for investigation, for "it is almost incredible that any natives who were the subjects of such visible, agonizing and slowly destructive diseases as cutaneous, lingual or mammary cancer would not have sought relief sooner or later at the hands of the white man" [as the author implies, this does not cover internal cancer]. The figures show that the negroes in South Africa are affected with sarcoma almost as frequently as with carcinoma, and that they exhibit a special liability to sarcoma of the subcutaneous tissue of the foot; of 11 sarcomata 4 originated at this site. He does not know whether pure-blooded American negroes who wear boots have a similar liability. In the same period there were received from domestic animals 6 malignant tumours (3 sarcoma; 3 carcinoma).

A. G. B.

BRADFIELD (E. W. C.). **Report on the Surgical Work at the Madras Government General Hospital, 1923.**—*Indian Med. Gaz.* 1924. Oct. Vol. 59. No. 10. pp. 515–518.

In this report the following items seem to be of particular interest:—

Cancer.—The Cancer statistics for the five years 1919–23 are as follows, out-patients unfit for operation not being included:—

	Europeans.	Hindus.	Moham-medans.	Other castes.
Total admissions, all diseases	9,221	24,227	2,422	7,160
Total cancer cases	36	288	23	35
Percentage cancer cases ...	0·37	1·19	0·95	0·48

The incidence of cancer by site and race (or caste) for the year 1923 was as follows:—

	Hindus.	European & Anglo-Indian.	Indian Christian.	Mohammedan.	Other castes.	Total.
Tongue and floor of mouth ...	7	2	...	...	...	9
Jaws	13	...	...	1	2	16
Cheek	28	2	1	5	1	37
Lips	2	...	...	1	...	3
Breast	7	1	...	...	...	8
Penis	17	...	...	1	...	18
Uterus	1	...	...	...	...	1
Anus and rectum	2	1	...	...	1	4
Stomach ...	6	...	...	2	...	8
Intestine ...	4	...	...	...	...	4
Larynx	1	1	...	...	...	2
Gullet	1	2	1	...	...	4
Liver	2	...	...	...	1	3
Bladder	1	...	...	...	1	2
Skin	3	...	...	...	...	3
Other parts ...	3	...	...	...	...	3
Total ...	98	9	2	10	5(*sic*)	124(*sic*)

The large proportion of cancers of cheek is attributed to the custom of betel-chewing and to the coarse lime (*chunam*) ingredient of the quid; the average age of these *chunam* cancer cases was 44 years, the youngest being 35. The disease spreads widely, and ultimately

the condition of the patient becomes very distressing and disgusting. In operation on mouth cancers the best procedure is to remove as much as possible—including the glands of the submaxillary triangle—with the knife, and to complete with free diathermic cauterization, using a button cautery and paying special attention to the area leading to the pterygoid region: a preliminary laryngotomy reduces the risk of bronchopneumonia, and shock is lessened by a preliminary injection of novocaine into the Gasserian ganglion—which also economizes general anaesthesia.

The average age of the cases of penile cancer was 54 years, the youngest being 40; it is safest to remove the inguinal glands at the primary operation, since otherwise the disease recurs oftener than was once supposed.

Liver Abscess. The routine treatment now is aspiration followed by a course of emetine. Of 33 cases so treated in 1923 only 2 died (mortality 6 per cent.), and these were unusually complicated cases. In the 10 years (1912-21) before the adoption of this treatment the mortality in 171 cases submitted to operation was 18 per cent. Of 11 cases treated by aspiration and emetine by the author himself, 5 were cured after one aspiration, 3 after two aspirations, 2 after three, and 1 after four. The danger with Indian patients is that the improvement is so rapid as to satisfy them that they are cured and to delude them into leaving hospital prematurely—only to return later.

Gastric and duodenal ulcer are much prevalent. In 1923 no less than 226 operations were performed for these diseases. The author himself treated 50 cases (duodenal ulcer 46, with 3 deaths; gastric ulcer 2; and cancer of the stomach 2, with one death) of which 3 were Indian Christians, 3 Mahommedans, and the remainder Hindus.

A. A.

BRAITHWAITE (E. C.). **Four Cases of Carcinomata in Africans.**—*Nigeria Ann. Med. & San. Rep. for the Year 1923.* Appendix IV. pp. 36–39.

The cases were: Epithelioma of the leg at the site of an ulcer; epithelioma of penis; malignant adenoma of rectum; scirrhus carcinoma of stomach. These were seen in 6 months and the diagnosis confirmed, after operation in 2 cases and autopsy in 2, at the Medical Research Institute.

A. G. B.

ROWNTREE (Cecil). **Causation of Cancer.** [Correspondence.]—*Brit. Med. Jl.* 1925. Mar. 28. p. 631.

Referring to kangri-burn cancer, which is considered to be a convincing proof of the "irritation" theory of cancer, the author suggests the possibility of a chemical origin. "Is it not possible that the constant baking to which the tissues are subjected results in the production of some chemical agent comparable in its effects with the soot, tar, oil, etc., now so firmly established as the causes of their specific cancers?"

A. G. B.

SANARELLI (G.). **Sur les vaccinations par voie nasale.**—*C.R. Soc. Biol.* 1924. Dec. 19. Vol. 91. No. 36. pp. 1302–1304.

The author gives brief details of the immunity produced by nasal inhalations of powdered vaccines in rabbit and man in enteric, cholera, and bacillary dysentery infections. Boric acid 3 gm. and powdered lactose, 7 gm. are mixed with cultures grown on agar and killed by

toluol, and the whole dried in a current of dry air at 52°. These vaccines blown into the nostrils of rabbits produce a solid immunity against the three diseases mentioned; not only is the agglutination titre of their blood high but they resist lethal doses of virulent bacilli injected into their veins. Here the effects in man will be briefly stated. Antityphoid vaccines given in this way provoke regularly the appearance of agglutinins in the blood. The titre may be equal to, or even higher than, that obtained by the subcutaneous method with commercial vaccines. The results of anticholera vaccination are less constant, but subcutaneous vaccination in this disease has also inconstant results; if the snuff contains antityphoid as well as anticholera vaccine, anticholera agglutinins appear promptly and in greater abundance. In man vaccinated with anti-dysentery snuff the agglutinins make their appearance slowly to reach a titre of 1:50; here, again, only when antityphoid vaccine is given concurrently.

A. G. B.

OTTEN (L.). **Vaccinatie per os.**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1924. Vol. 64. No. 6. pp. 940–977. [17 refs.]

Otten offers ample criticism of BESREDKA's experiments on, and VAILLANT's practical application of, oral vaccination in man, the argument of which cannot be summarized in detail. His conclusions are the following:

1. The experiments of BESREDKA are incomplete and do not constitute a sufficient base for the practice of oral vaccination in man.
2. The question of local immunity of the intestine is not merely of theoretical interest but also of practical importance in view of the pathogenesis of acute infectious intestinal diseases.
3. BESREDKA's principal argument, the decrease and disappearance of antibodies from the blood after repeated oral vaccination, is not supported by the experimental results of other authors.
4. Also, the statistical data available, especially those of VAILLANT, are absolutely insufficient to prove the value of oral vaccination, let alone to make comparison possible with the value of the subcutaneous method.

W. J. Bais.

TYAU (C. H.). **The Value of Post-Mortem Examination.**—*Nat. Med. Jl. China.* 1924. Dec. Vol. 10. No. 6. pp. 361–369.

These judicious exhortations on the value of post-mortem examination are very appropriate, since in Eastern countries this perennial root of the tree of knowledge is still insufficiently cultivated. The author gives three illustrations of its value in correcting a diagnosis made in unpropitious circumstances during the patient's life. A. A.

i. DE BOER (H. S.). **A Survey of European Children of School-going Age attending Schools in Nairobi, Kenya Colony.**—*Kenya Med. Jl.* 1924. Dec. Vol. 1. No. 9. pp. 265–269. With 2 charts.

ii. MACKINNON (M.). **European School Children in Kenya.** [Correspondence.]—*Ibid.* 1925. Feb. Vol. 1. No. 11. pp. 341–342. [1 ref.]

i. The author examined 262 children and tabulates the height, weight and chief defects for years from 7 to 16 of boys and girls

separately. The average heights and weights of English children are *not* given, as is stated, for comparison. The tables show, the author explains, that children in Kenya are taller and heavier than children in Britain, that boys are taller than girls up to 7, are left behind at 9 and only regain their superiority after 14. Girls equal boys in weight at 8 and after that are heavier till 14. The greatest increase in weight in girls occurs between 10 and 11, and in height between 8 and 9, and 10 and 11. The increased height and weight of Kenya children are due to a better dietary than that of "board school" children in England. The author questions whether climatic conditions at Nairobi are not tending to develop girls too rapidly. Of the 262 children 24 per cent. had dental caries, but this percentage does not include those already treated; 18 per cent. had enlarged tonsils or adenoids. Two enlarged spleens were found among 112 boys, a small number, for several came from homes "in what must be considered distinctly malarious districts."

ii. Commenting on de BOER's observations and comparing them with his own, which concerned a larger number of Nairobi children [see this *Bulletin*, Vol. 20, p. 915], the author concludes that climatic conditions in Kenya exert an undue stimulating influence on growth and development in young children which has in course of time—after ten—a depressing influence and "is certainly injurious."

A. G. B.

VAN BERKHOUT (P. J. Teding). **Dosages du glucose, de l'azote non proteique, de l'acide urique et du phosphore-total, dans le sang chez l'homme sain, habitant les regions tropicales, et dans celui de l'oiseau dans l'avitaminose.**—*Reports of the Dutch-Indian Med. Civil Service.* 1924. Pt. 4. pp. 326–343. [48 refs.]

The chemical composition of the blood was studied in healthy Europeans and Malays in the tropics and in birds submitted to a deficient diet. The methods of determination are described; the reducing power was studied in three ways. The conclusion reached was that in healthy men the determination of glucose, non-albuminous nitrogen and uric acid gave results not differing from those obtained in temperate regions, whilst the determination of total phosphorus gave a rather higher figure. In cocks in a condition of avitaminosis the content of the blood in reducing substances, non-albuminous nitrogen and total phosphorus did not differ appreciably from the normal values, but in pigeons in the same circumstances a pronounced hypoglycaemia usually became manifest. Those who are interested should study the tables.

A. G. B.

WATKINS-PITCHFORD (W.) & ALLAN (Peter). **An Investigation into the Significance of Localized and More or Less Persistent Râles in the Marginal Areas of the Lungs of apparently Healthy Natives.**—*Publications of the S. African Inst. for Med. Res.* 1924. Mar. 20. No. 18. 35 pp. [8 refs.]

"Defective Lungs" is the term used to describe a condition which has been a frequent cause of rejection of native applicants for labour in the mines in South Africa. Enquiry has shown that the expression implies a state "in which râles, usually finely crepitant in character,

are detectable in the marginal areas of the lungs of apparently healthy natives who seem to be free from all other physical signs of disease." Between July, 1922, and June, 1923, 2,679 men were rejected by medical inspectors for this cause out of a total of 73,534 natives examined in British South Africa, and it appeared desirable that the real significance of a sign leading to the rejection of 3·5 per cent. of recruits should be investigated.

During the four months period April–August, 1923, a group of 113 recruits from amongst 980 men rejected on grounds of physical unfitness, were selected by the Depot Medical Officer as being more or less typical examples of "Marginal râles." One of these men proved to have a pneumonic condition and, in another, the râles disappeared, so that a total of 111 cases remained for investigation. The râles were, for the most part, unaccompanied by other signs of respiratory trouble, nor was a history of such present as a rule.

Twenty cases, however, had slight cough and 33 provided occasional samples of sputum described as "whitish" or "yellowish"; none of these samples was found to contain tubercle bacilli. Pain in chest was complained of by 14 cases and corresponded in position to the râles in 10 of them. Eighty-nine cases were classed as being "within the range of normality" on radiological examination and, in 23, the X-ray films called for comment, a proportion such as might be expected in a group, 85 per cent. of which had already engaged in underground labour in the mines on former occasions. In two cases only were the appearances suggestive of early silicotic change, and, in them, the râles were not extensive, so that it does not seem probable that silicosis has anything to say to the production of the condition. In eight cases, the radiographic appearances were suggestive of tuberculosis.

The question of the association of these râles with tuberculosis had been, from the first, one of the most important points to be considered and these radiological findings were, therefore, of great interest. It was found that the Von Pirquet test applied to the group under investigation gave 92 per cent. of "positive" results, while a further group of 100 labour recruits, found free from râles and tested at the same time, gave 95 per cent. of "positives." The real test, however, consisted in passing the group on to work in the mines, a monthly medical examination being arranged for and also a final examination on the expiry of the term of employment. Of the eight men noted as having radiological signs suggestive of tuberculosis, two were rejected by the mine medical officers on other grounds so that only six of these went through the period of employment. Only three of the whole group developed tuberculosis during this period of hard work, and all three were amongst the cases in which the preliminary X-ray examination had been regarded as suggesting the possibility of infection.

It may fairly be concluded, therefore, that these "marginal râles" are not indicative of early tuberculosis infection, though, as the authors rightly add, they may sometimes "obscure the auscultatory signs of pulmonary tuberculosis." The investigation, in addition to establishing this important conclusion, goes further and shows that the râles are not to be taken as evidence of "defective lungs" nor to be regarded as in themselves a cause for rejection of native recruits for the gold mines. The period of employment, from two to six months, undergone by the test groups was followed, not by any undue percentage

of disability, but by a general improvement in physique, and a tendency, in many cases, for the râles to diminish or disappear. The râles are regarded as "pleural in origin" and as probably resulting "from diminished lubricity of the serous surfaces." As the authors say, "there is no specific or constant association between the occurrence of marginal râles and the presence of, or predisposition to, any known disease. The phenomenon is, therefore, *sui generis*." These conclusions should be laid to heart by all whose duty it is to select native recruits either for the purposes of labour or of military service.

S. L. Cummins.

DIXON (W. E.); CHARLES (R. Havelock); POWELL (Arthur). **A Discussion on Drug Addiction in the Tropics. I. The Physiological Aspects of Drugs of Addiction** [DIXON]. **II. Some Clinical and Scientific Aspects of Drug Addiction in the Tropics** [CHARLES]. **III. The Association of Narcotics with Insanity and Crime in the Tropics. Observations on the Possibility of Addiction to Cocaine Substitutes** [POWELL].—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1924. Nov. 20 & Dec. 11. Vol. 18. Nos. 5 & 6. pp. 249–265. [6 refs.] (Discussion pp. 266–275.)

Discussions in which all the terms are not rigidly defined and regulated remind one of Hobbes' simile of birds that, entering a chamber by the chimney, flutter in distraction at the windowpane for want of wit to find the way out again through the chimney. In such fluttering debate parties are apt to forget that "true and false are attributes of speech, not of things."

Much of the present discussion was of matter of opinion, and little of it was new. Professor Dixon defined drugs of addiction as drugs that are used either to produce sleep after preliminary stimulation, or to silence the higher faculties of mind and "leave the lower centres, so to speak, to run riot," and at the close he amplified his definition by stating that "the view of most neurologists at the present time was that, in European countries and America, people take drugs of addiction, and alcohol, to excess because they are psychopaths already."

Sir Havelock Charles, who spoke of opium as habitually used by multitudes of Indians, honourably and frankly admitted that his opinions on the subject were based not on science and logic, but on sentiment that may change without detriment to humane principle. In the pride of youth he was a stoic and had all a stoic's contempt for cakes and ale; so that, although he then lived among Indian soldiers, who had used opium from their youth up, and yet were brave, well-disciplined, and inured to very hard labour, he hardened his heart against that drug and would have forbidden it. The uncompromising stoicism of youth sometimes broadens down to a well-tempered benevolence; and we here find Sir Havelock Charles fully approving opium as used by the notoriously temperate native of India.

Dr. Powell, who spoke from long Indian experience of the abuse of drugs of addiction, said that the fakirs, sádhus, and bairagis—for the most part dissolute wastrels fit only for jail or asylum—were addicted to Indian hemp; also, that of 4,700 lunatics of whom he had knowledge 824 had a definite history of addiction to Indian hemp, and 40 to cocaine, but that not one among them all was an eater or smoker of opium.

Dr. GUINNESS, who had 27 years' experience as a medical missionary in China, spoke of opium smokers being willing to sell wife and family in order to procure opium, of opium-eating chairmen whose powers of endurance were much reduced, and generally of the shame and degradation associated with the use of opium both in fact and in Chinese public opinion.

Dr. SCOTT, who had two years' experience of China, stated that well-to-do Chinamen who smoke opium much as Europeans smoke tobacco, were industrious and particularly honourable men of business.

Dr. HAWORTH instanced Kaffir beer as an intoxicant (and frequent cause of crime) which was of purely indigenous origin entirely independent of any European influence.

A. A.

ARCHIVOS DEL INSTITUTO NACIONAL DE HIGIENE DE ALFONSO XIII. 1924. Oct. Vol. 3. No. 3. pp. 211–221.—**Notas Parasitológicas.** [LUENGO (E.), AZNAR (P.), DE BUEN (Sadí).] [13 refs.]

In this section of the "Archivos" brief references and remarks are made on matters which are not yet deemed of sufficient importance to warrant publication in extended form. Nine such are dealt with in the present issue, but only the following need be mentioned here :—

(1) *Blood changes following administration of "Bayer 205."*—The author finds a reduction in the mononucleosis as compared with that present before treatment, and a slight shift to the left of the Arneth count. In an adjoined table he presents other details, notably in two instances an increase in erythrocytes ; to over 7½ million per cmm. in one patient, and nearly 8½ million in the other. But, he states, "these may be due to errors in technique."

(2) *The action of the serum of a patient treated with "Bayer 205" in preventing trypanosome infection of rats.*—Two rats only were used, and it was concluded that the serum is trypanocidal and prevents experimental infection, and that this action is not due to persistence of the drug as such in the serum, but to immune substances resulting from destruction of the parasites.

(3) *The Trypanocidal action* in vitro *of the serum of a patient treated with "Bayer 205."*—As a result of six experiments with guineapigs the serum was shown to possess trypanocidal properties, but not so powerfully as to bring about trypanolysis such as occurred *in vivo*.

(4) *Ankylostomiasis in Valencia.*—When carrying out an antimalarial campaign the author took the opportunity of examining faeces and found hookworm ova in an unstated number of the inhabitants.

(5) *The use of certain chemicals as larvicides.*—The chemical was in each case used in a strength of 1 in 1,000, and the following are the most important results : Ammonium or potassium nitrate killed mosquito larvae in 3 days, potassium nitrite in 48 hours, sodium nitrite in 3 hours ; neither the sulphate or chloride of ammonium, sodium hypo-sulphite, or hydrochloric acid had any detrimental effect. The author conjectures from these findings that Anopheles prefer clean water because putrefaction in foul waters, by formation of nitrate and nitrite, would be inimical to the larvae.

(6) *The geographical distribution of relapsing fever.*—Investigations have revealed the fact that in Spain there is a considerable area in which relapsing fever is endemic. In the Province of Cáceres 15 cases were seen, and 3 each in Toledo, Badajoz and Huelva.

H. Harold Scott.

DE MELLO (Froilano), COSTA (Antonio Rodrigues), PAES (Santana) & REBELLO (Frederico). **Impressions d'une visite médicale à Chibia.**—*Revista Méd. de Angola.* (No. especial 1e Congresso de Med. Trop. da Africa Ocidental. Vol. 4. 6a. 7a. e 8a. Sessões.) 1923. Aug. No. 4. pp. 401–408. With 1 plate.

Chibia (lat. 15° 14′ S., long. 13° 14′ E.), in the south-western corner of Angola, lies nearly 5,000 feet above sea-level, in the broad vale of the Tchichimpura, in a region of hills and very fertile valleys. It has a regular rainfall, and the winter minimum temperature often falls several degrees below freezing point. The town is surrounded by all the elements of prosperity and might be a health resort for Europeans, and yet is a wretched discomfortable place with a population of only 1,090, of which 300 are negroes. Malaria is prevalent from March to May, and 10 per cent. of the population is infected with *Schistosoma haematobium* ; this is due to the fact that the Tchichimpura here is sluggish and in places marshy, forming ample breeding places for Anopheles and pond-snails (Bullinus and Planorbis). Dysentery, smallpox, and chickenpox are common, and in the cold weather pulmonary diseases are frequent, especially among the negroes. The intestinal parasites observed are ascaris, oxyuris, trichocephalus, and bothriocephalus. Though the place now is so unhealthy it could be made healthy at no great cost.

A. A.

HERTSLET (Lewis E.). **The Medical Care of South African Natives on the Gold Mines of the Witwatersrand.**—*Jl. Indust. Hyg.* 1924. Nov. Vol. 6. No. 7. pp. 291–305. With 4 figs.

Here we have a first-hand account of the medical care of the natives at work on the Witwatersrand gold mines (*cf.* BRUMPT & JOYEUX, this *Bulletin*, Vol. 21, p. 388). The strip of the high veldt concerned is 70 miles long and 1 or 2 wide, lies at 6,000 ft. altitude and has a climate which is " one of the best in the world." Here, in 40 mines, are distributed some 184,000 natives who remain, as a rule, less than a year. Forty-five per cent. come from sub-tropical Portuguese East Africa, 30 per cent. from the Cape Province and the remainder are Basutos, Swazis, Bechuanas or Zulus, the great majority, when at home, living " in a condition of semi-barbarism." The average age is 20–30. Besides their wage they get a complete food ration, living and sleeping quarters, and free medical attendance. The author describes the medical examination of recruits, periodic weighing, the housing, dietary, diseases, mortality rates, hospitals, first-aid work, medical staff, research and experimental work, and welfare organization.

As to the examination of recruits, the instructions sent to the country doctors in the Union indicate, among other things, as a cause of rejection, valvular heart lesions, evidence of recent wasting, scurvy, extensive pyorrhea, venereal disease, tuberculous glands. Natives who come of their own motion or from Mozambique are examined by the medical officer at the mine. Every boy is weighed on arrival and again every month and the weight recorded on a card ; this system was introduced for the early discovery of silicosis or tuberculosis of the lungs, and, as all short weights are detained for medical

examination, the labour force is continually under the control of the medical department.

The minimum ration, supplied ready for consumption [no details of cooking], is as follows :—

" *Mealie-meal,* or ground maize (Indian corn).—24 oz. ; 2,568 calories. This forms the staple diet of the bulk of South African tribes. It is used in two forms :—

" (*a*) Thick porridge, cooked by steam and issued in thick, hot slabs ;

" (*b*) Mahewu—a drink formed from the meal mixed with flour, made sharp in taste by a lactic acid fermentation.

" *Bread.*—6 oz. ; 441 calories. This is made from wholemeal flour and mealie-meal.

" *Beans or Peas.*—1·5 oz. ; 145 calories. These are put into the soup.

" *Germinated Beans or Peas.*—1·5 oz. ; 145 calories. These are kept in a warm, damp, dark place until sprouting begins. They are then mixed with the soup, and are valuable in the prevention of scurvy.

" *Meat.*—8·5 oz. ; 615 calories. Part of this is made into soup ; part is issued raw, and the boys are allowed to roast it at the fires in their rooms.

" *Peanuts* (ground or monkey nuts).—2 oz. ; 241 calories. These contain a large proportion of vegetable oil and are eaten raw.

" *Sugar.*—1 oz. ; 116 calories. Part of this is used with the cocoa ration.

" *Fresh vegetables.*—5 oz. ; 80 calories. Of these, carrots and turnips are issued and eaten raw.

" *Salt.*—0·5 oz.

" *Cocoa.*—0·25 oz. ; 34 calories.

" *Kaffir-beer* made from amabele or kaffir-corn.—6 oz. This is usually issued three times a week."

The table gives the new admissions for disease in 1912 and 1923 of over 66,000 natives.

Disease.	1912.	1923.	*Variation.*
Pneumonia	4,432	1,081	—3,351
Silicosis	63	56	— 7
Tuberculosis of the lungs	675	302	— 373
Bronchitis	1,828	903	— 925
Cerebrospinal meningitis	72	187	+ 115
Enteric fever	242	164	— 78
Dysentery and other diarrheal diseases	1,127	491	— 636
Scurvy	618	138	— 480
Influenza	2,704	2,737	+ 33
Septicemia and cellulitis...	35	7	— 28
Heart disease	82	67	— 15
Liver disease	37	14	— 23
Venereal disease	133	376	+ 243
Rheumatism, acute and chronic ...	1,633	540	—1,093
All diseases	28,058	18,764	—9,294
All diseases, monthly average	2,338	1,564	— 774
Percentage of shifts lost through sickness	1·826	0·710	—1·126

" These totals are only for ten mines chosen for variety of position and conditions, and are a fair indication of the whole situation."

Decreases are shown in all cases but cerebrospinal meningitis, influenza, and venereal disease [the latter figures are small and suggest that many cases are unreported or that the figures do not include dispensary patients]. More than half the hospital beds are filled with accident cases. A comparison of the mortality rates for 1913 and 1923 show a drop for every disease except meningitis and heart disease (increases) and malaria (no change). The death rate from

disease in 1923 was 11·86 per mille. The pneumonia rate in 1913 was 7·52 and in 1923 2·98 (0·33 of which is broncho-pneumonia).

The author writes :—

"Since the year 1918 the anti-pneumococcal vaccine devised by Sir F. Spencer Lister of the South African Institute of Medical Research has been administered as a prophylactic measure to all natives on every mine as soon as they have been passed by the medical officer as fit for work. The vaccine contains identified representatives of eight immunologically distinct groups of the pneumococcus. The usual practice is to give three inoculations, at intervals of from five to ten days, each dose containing eight billions of pneumococci. Over three million inoculations have been administered."

A. G. B.

TRANSVAAL MINES. **The Organisation of Native First Aid in Transvaal Mines. Report of Joint Committee. Issued by the Chamber of Mines.** 1924. Oct. 14 pp.

At a meeting of the Transvaal Mine Medical Officers' Association in June, 1923, it was resolved, after discussion of a paper on the organization of native first aid work, to appoint a committee to consider and to formulate suggestions on that subject, and we have here the Committee's report.

A. A.

KADANER (M.). **La pathologie des indigènes de la région de Lokandu.**—*Ann. Soc. Belge de Méd. Trop.* 1924. Nov. Vol. 4. No. 2. pp. 149–155.

Lokandu, where the author has spent two years, is on the Upper Congo at about 3° S. He gives his impressions of the diseases seen. In the examination of some 20,000 natives, macular *leprosy* has been recognized in 4–5 per cent. ; the native name is "bukoma." Nodular leprosy at first appeared to be rare but when the doctor had inspired confidence in the native mind victims appeared from semi-isolation in considerable numbers. The number thus affected reaches 0·5–1 per cent. Some success in treatment has been obtained by injections of atoxyl and tartar emetic (0·5 gm. atoxyl, 0·1 gm. emetic every 7 or 14 days).

Yaws is universal : injections of 914 have been used with striking success. *Syphilis* also is widespread along the river, rare in the interior. *Sleeping sickness* is found along the river between Kindu and Pontierville. In a stretch of 12 miles 75 cases were detected ; the natives come readily for treatment. *Smallpox* is rare owing to vaccination ; varicella epidemics are frequent and shingles usually appears at the same time. *Amoebic dysentery* is fairly common, 40 cases treated ; liver abscess is very rare. *Bilharzial dysentery* occurs less frequently ; bacillary dysentery is believed to occur. Statistics of *helminth* infection are given, but the number of examinees was small ; ascaris was by far the most common worm. The splenic index of *malaria* in children is 60 per cent. *Phagedenic ulcer* is widespread. *Goitre* is common in the women and children of certain villages. Of *tuberculosis* no case has been diagnosed with certainty. The tuberculin reaction was positive in 15 per cent. of troops in the camp (800 examined). Following an epidemic of pneumonia was an epidemic of *mumps*. A few *malignant tumours* have been met with.

A. G. B.

LENZ (Wilhelm). **Aerztliche Erfahrungen beim Bahnbau in Deutsch-Ostafrika 1909–1914** [Medical Experiences on Railway Construction in East Africa].—*Deut. Med. Woch.* 1924. Oct. 10. Vol. 50. No. 41. pp. 1417–1418.

Experiences of a P.M.O. during the construction of the railway from Dar-es-Salam to Kigoma and Tanganyika in 1909–14. About 400 Europeans and 15,000 natives were employed on the work, and 3 European medical officers. The labour was spaced at intervals of about 100 kilometres and also at points where extra heavy work was anticipated; and as work progressed it moved on at the rate of about a kilometre a day, only a few large centres remaining fixed. The accommodation for the sick included a well-built hospital of 20 beds for Europeans, a central hospital of about 100 beds in wooden pavilions for natives, and wattle-and-dab dispensaries at intervals of about 30 kilometres for natives. At the European hospital, besides arrangements for microscope work there was a central medical store.

A. A.

FULLER (Claude). **A Visit to Northern Zululand.**—*S. African Jl. Nat. History.* Pretoria. 1924. Mar. Vol. 4. No. 4. pp. 269–276. With 1 plate.

The visit was made in September-October to a tract watered by the Mkuzi river and rendered extremely malarious at certain seasons by the swamps formed by the flooded stream. At this time, however, the land was in the hard grip of a nine-months' drought, but although the Anopheles were thus deprived of breeding-grounds they were found in large numbers sheltering in the dry reed beds. In almost every kraal *Ornithodorus moubata* was in evidence: this tick is said by the natives to retain life in kraals that have been abandoned for five years, and its bite is said to cause fever and syphilis-like sores. Itch is very prevalent, especially among young people, and particularly females; apparently it subsides spontaneously in the course of two years and leaves a legacy of immunity. Jiggers are plentiful. The author could not discover any ground for the popular belief that dipping-tanks are inhibitory to mosquitoes.

A. A.

LEFÈVRE (R.). **Note sur les affections intestinales au Soudan Français (Cercle de Mopti).**—*Bull. Soc. Path. Exot.* 1924. Dec. 10. Vol. 17. No. 10. pp. 944–945.

Contrary to accepted opinion, intestinal complaints are common in the French Soudan. Among the white population of the Mopti circle [Upper Niger] the author observed 15 cases of amoebic dysentery in a year, and at the dispensary *Entamoeba histolytica* was found in the stools of 127 patients examined. Enteric fever occurs among whites, and the author has diagnosed two cases among natives as enteric abscess, probably typhoid, although no laboratory confirmation was feasible.

A. A.

LEVADITI (C.) & NICOLAU (S.). **Le Neurovaccin.**—*Bull. Médical.* 1924. No. 53. 21 pp. With 6 plates and 4 figs. [10 refs.]

The natural affinities of neurovaccine have been referred to in this *Bulletin* (Vol. 19, p. 618, and Vol. 20, pp. 680 and 847), and its practical utilities also (Vol. 20, p. 847, and Vol. 22, p. 155). In the present paper these practical applications are the subject of controversy. The authors admit that the results obtained with neurovaccine still require to be studied in comparison with those obtained by ordinary Jennerian vaccination, but they insist on the ideal "microbian sterility" of neurovaccine and its facility of manufacture, and they also state that the rather violent local reactions sometimes caused by neurovaccine do not occur in the course of successive passages from skin to skin. This paper includes some excellent photogravure illustrations of neurovaccine pustules.

A. A.

DE FARIA E MAIA (Carlos Roma Machado). **Rapide mémoire sur les contrées de l'Afrique Portugaise où doit se fixer la race blanche spécialement la nôtre à la Province de Angola.**—*Revista Méd. de Angola.* (No. especial 1e Congresso de Med. Trop. da Africa Ocidental. Vol. 5. 9a. 10a. e Sessão de encerramento). 1923. Aug. No. 4. pp. 167–178.

The author, a colonel of engineers, with an extensive knowledge of the Colony, gives an account of the tablelands which he thinks well suited for colonization by the white race, as well as the strip of coast between the 12th and 17th degrees of latitude. Here, *e.g.*, at Mossamedes, and in the interior are places where four generations of Portuguese have been born and bred.

A. G. B.

LHUERRE (H.). **Sur l'emploi abusif de la quinine dans le traitement des pyrexies.**—*Bull. Soc. Path. Exot.* 1924. Dec. 10. Vol. 17. No. 10. pp. 941–944.

The author gives the history of several patients with fever in Senegal submitted to prolonged treatment with quinine for conditions not dependent on plasmodial infection, *e.g.*, hepatic insufficiency, urethral stricture, syphilis. He attributes the large doses of quinine now given to the practice in Macedonia in the war, when the subjects were healthy and could stand toxic amounts, whereas many persons in the tropics cannot; he suggests that since quinine paralyses the white corpuscles it may hinder their mobilization when an infection other than malaria is in question, so that large doses of quinine can in a sense cause fever. Finally he draws attention to the truth that in malaria it is the patient and not the parasite that has to be treated.

A. G. B.

COOKE (Francis H.). **Note on a Case illustrating the Importance of Microscopic Examination of the Urine.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1924. Oct. 23. Vol. 18. No. 4. p. 219.

"An African male adult, aged 22 years, consulted me complaining of the sensation of a worm passing up and down his urethra before micturition. There was no history or symptom of gonorrhoea, and no signs of blood in the urine, which was voided naturally and at regular intervals.

"A specimen of urine was passed in my presence, into a clean urine glass, was centrifuged, and under the microscope numerous scolices of *Taenia echinococcus* were found."

A. G. B.

BURKITT (R. W.). **The Modern Treatment of Fevers, with Suggestions therefrom as to the Treatment of Animals. Part I. Human Fevers.**—*Kenya Med. Jl.* 1924. Nov. Vol. 1. No. 8. pp. 224–231.

A plea for the vigorous treatment of fevers from any cause by cold water, outside and in. The temperature is kept down if possible to 100°. The naked patient lies on a mackintosh sheet in a current of air and is kept continually wet till his temperature falls. His urine is never allowed to be acid; bicarbonate of soda in plenty of water is given till the urine ceases to turn blue litmus red. A full-blooded person should be bled a pint or so. The patient is encouraged to drink "enormous lots of cold water." No food is given but sugar till he is hungry. The bowels are kept open and the mouth clean. By this method, given here in barest outline, the author claims to have treated 275 cases of pneumonia, before the 4th day, with only one death.

A. G. B.

TAOKA (K.). **Serological Studies of Experimental Protozoan Disease.**—*Japan Med. World.* 1924. May 15. Vol. 4. No. 5. pp. 111–115. With 1 chart in text.

A syphilitic serum contains a specific substance giving a specific complement fixation or precipitin reaction demonstrated respectively by Wassermann and Sachs-Georgi tests. The properties, and mechanism of reaction, of this substance have been made clear since its isolation in comparatively pure condition (TAOKA; *Kitasato Archives*).

How this reacting substance is produced is not known. The author's experiments, here detailed, were directed to determine its origin. They cannot be summarized; only an indication of the scope of the work and the author's conclusions can be given.

A study—chemical and biological—of the sera of—A. Rabbits infected with 1. *Trypanosoma gambiense*. 2. Rat-bite fever spirochaetes. B. Monkeys infected with rat-bite fever spirochaetes, and C. A man infected with rat-bite fever spirochaetes, revealed that after an incubation period specific substances are formed in the sera, in close relation to the courses and living phenomena of the infecting agents. In the trypanosome and rat-bite fever infections there is formed a substance reacting to the Wassermann and Sachs-Georgi tests, which resembles, and is probably identical with, the similarly reacting substance present in syphilitic sera: and besides this substance, there is formed as well, *in the rat-bite fever infections*, another substance—a haemolysin with anti-sheep haemolytic action. These two substances were separated and studied apart. In its manner of reaction this haemolysin resembles a heterophile immune body.

The fact that on infecting rabbits with trypanosomes and spirochaetes, different substances respectively are formed in the rabbits, indicates that it is the infecting agent which directly effects the production of these substances, rather than the host's body.

In the rat-bite fever infections, since the rabbit's organs are non-heterophile, the production of a body resembling heterophile antibody indicates that the spirochaete is the cause of its formation.

H. M. Hanschell.

POPOFF (P.). **Das Tropeninstitut und die tropischen Krankheiten Armeniens.** [The Tropical Institute and the Tropical Diseases of Armenia.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1924. Oct. Vol. 28. No. 10. pp. 453–458.

Forty per cent. of Armenia lies 6,000 feet above sea level, but there are several mountain streams and rivers from which the cultivated land is irrigated. In the lower-lying parts malaria is widespread. In the bodies of ten persons dead of another disease malarial changes were found in all, in the bonemarrow, spleen and brain. The author was entrusted with the foundation of a Tropical Institute, primarily for the control of malaria. It has protozoological, helminthological and clinical divisions, under their several leaders, the Director being Dr. KARAPETJANZ. Four flying sections are available for malarial campaigns. Malarial parasites are found in the following proportions [number of examinations not stated]: *falciparum* 59·5 per cent., *vivax* 29·5, *malariae* 9 per cent. (June–August, 1923). The splenic index is said to average 5·7 per cent. *Anopheles plumbeus* Halliday has recently been discovered, a new record for Russia. In the Aras valley *A. pseudopictus*, *A. maculipennis* and *A. bifurcatus* were found: in the hills is another, undetermined, species. Undulant fever occurs; the people share their houses with donkeys, cattle, sheep and goats, and live largely on milk products. Twenty-two cases of pellagra, a very fatal disease, were seen and a case each of hill diarrhoea, sprue and blackwater fever. Amoebic dysentery is common. In the examination of 120 stools for helminths were found:—

A. lumbricoides	100 per cent.
Tr. trichiura	87 per cent.
O. vermicularis	20 per cent.
T. saginata	2 per cent.
Bothriocephalus latus ...	one case.

Echinococcus is fairly frequent in man and was found in Eriwan in 70 per cent. of dogs. *Fasciola hepatica* has been identified twice in human livers. Of leprosy there are about 100 cases, now under treatment. Pappataci fever is common; dengue has not been observed. Kala azar has not been seen but is known to occur; similarly, dermal leishmaniasis is reported absent, but occurs in dogs.

A. G. B.

WORK (Hubert). **The Indian Medical Service.**—*Milit. Surgeon.* 1924. Oct. Vol. 55. No. 4. pp. 425–428.

The service here referred to is the medical service of the North American Indian Reservations, and the subject of the paper is not so much the nature and conditions of the service as the diseases it has to deal with. The writer states that there are no diseases peculiar to the American-Indian race, but that, by reason of the conditions under which they live, their insanitary housing and their faulty diet, they suffer in a peculiar degree from tuberculosis and trachoma, and—in the case of children—from severe and often fatal gastro-intestinal complaints. Venereal diseases are rare among the full-bloods who keep to their own traditionary customs.

A. A.

BAIS (W. J.) & VERHOEF (A. W.). **On the Biochemical Index of Various Races in the East Indian Archipelago.**—*Jl. of Immunology.* 1924. Sept. Vol. 9. No. 5. pp. 383–386. [10 refs.]

The writers, working on the east coast of Sumatra, have tested the blood of 1,346 imported Javanese coolies, 546 native Sumatrans (mostly of the Batak race), school children over 10 years and out-patients, and 592 imported Chinese coolies, and find their grouping, by Jansky numbers, and corresponding biochemical race indices, to be as follows, stated in percentages :—

	I. O	II. A	III. B	IV. AB	Index. $\frac{A+AB}{B+AB}$
Javan	39·9	25·7	29·0	5·4	0·9
Sumatran ...	43·7	23·0	29·0	6·7	0·82
Chinese	40·2	25·0	27·6	6·9	0·92

These results, they consider, admit the conclusion that the biochemical race index increases from British India (race index 0·56 according to the HIRSCHFELDS) eastwards and south-eastwards, and support the HIRSCHFELDS' assumption that the agglutinable element B originated in Central Asia.

They describe their methods of investigation, and they also have some interesting speculations on possible phyletic significations of the agglutinable element A.

A. A.

GARCIA DE QUEVEDO (Luis). **Influencias del clima, de la mala alimentaçion y de las enfermedades tropicales en el caracter del puertorriqueño.**—*Bull. Porto Rico Med. Assoc.* 1924. Dec. Vol. 18. No. 147. pp. 19–28.

This is an address to the Legislature and medical profession of Porto Rico. The author states that the Porto Rican of the present day is a physical wreck, that 85 per cent. of the children suffer from dental defects, hypertrophied tonsils and general under-development. These conditions are ascribed to the bad climate, high temperature and humidity, to anaemia due in part only to ankylostomiasis, in part to intestinal toxaemias of various kinds, to malaria, syphilis, filariasis and dental caries. Finally, the food of the Porto Rican is all wrong ; the elements are, if not deficient in quantity, badly balanced. In short, the author appears to regard Porto Rico as anything but a White Man's country and he calls upon the elected members and the medical profession to rouse themselves and do something. [See also HEGNER (this *Bulletin*, Vol. 20, p. 751), who attributes the prevalent ill-health to over-population and low wages.]

H. Harold Scott.

REIS (Fidelis), FRAGA (Clementino) & BARRETO (Fabio). **O problema da immigração japoneza para o Brasil.**—*Rev. Med.-Cirurg. do Brasil.* 1924. Dec. Vol. 32. No. 12. pp. 601–607.

The opinions of three eminent persons in Brazil relative to the immigration of the Japanese were asked. They are practically unanimous in saying that, to avoid racial and political disturbances, the number allowed should be restricted to 5 per cent. of the present number, roughly estimated as 40,000. Other reasons given are that the Japanese do not stand well the local conditions of labour and that they are believed to be highly susceptible to tuberculosis.

H. Harold Scott.

SIKORA (H.). **"Der gegenwärtige Stand der Rickettsia-Forschung." Bemerkungen zu der gleichnamigen Arbeit von Weigl in Jg. 3, Nr. 35, S. 1590 u. Nr. 36, S. 1636 dieser Wochenschrift.**—*Klin. Woch.* 1924. Oct. 28. Vol. 3. No. 44. pp. 2008–2009.

WEIGL, having criticized the "not entirely unobjectionable technique" and "something obscure description" of the author's work on the distinction between the intracellular Rickettsiae of the louse and the Rickettsiae found free in all parts of that insect, the author deems it necessary to give a review of that work and its technique. The only obscure point that the author himself acknowledges is whether *R. pediculi* and *R. wohlhynica* are distinct species, or whether the latter is a variety of the former which by some unknown influence becomes pathogenic to man. He himself thinks that they are two species, the distinction between which may hereafter be elicited by culture experiments.

A. A.

i. VAN NITSEN (R.). **De la fréquence de la pneumonie chez le noir du Katanga.**—*Bull. Méd. du Katanga.* 1924. Dec. Vol. 1. No. 6. pp. 227–228.

ii. LANGERON (Jean). **Etude sur la pneumonie. II. Etude sur la sérothérapie de la pneumonie. Valeur thérapeutique des sérums des convalescents.**—*Ibid.* pp. 229–233.

iii. SPEDENER. **Le traitement des pneumonies des noirs par transfusion de sang des convalescents.**—*Ibid.* pp. 234–238. [6 refs.]

iv. VAN NITSEN (R.). **La pneumonie chez le noir. Essais de traitement.**—*Ibid.* pp. 239–242.

v. GERMOND. **Statistique des cas de pneumonie traités par transfusion de sang des convalescents.**—*Ibid.* p. 243.

i. Statistics are given from the Native Hospital, Panda. In a period of two years there were 892 admissions for pneumonia; cases complicating other diseases are excluded. Apart from 14 brought in dead or dying the mortality was 21·6 per cent. In the same period 4,901 new cases were admitted, so that pneumonia represents 16·15 per cent. of admissions. If the average stay of a pneumonia patient in hospital be put at 40 days, these illnesses accounted for 35,680 days or 1,486 days a month. Again, in this period there were 269 deaths, so that pneumonia caused 77·3 per cent. of the total deaths; 8 out of every 10 deaths owned this cause.

ii. The serum of hyperimmunized animals has been employed in the treatment of pneumonia in man, and where it is effective its action appears to be specific; the difficulty, however, of determining what serum will be active in a given case restricts its use. In a localized epidemic the pneumococci will belong to the same type or to a small number of types, so that the serum of a convalescent is likely to contain the desired therapeutic substance.

The author, fearing the possible presence of pneumococci in the serum and blood incompatibilities, gave it at first subcutaneously, but this not availing, he used intravenous inoculation with a heated serum. In case there is more than one type, it is his practice to employ three serums, 30 cc. of each, *i.e.*, about 100 cc. If no improvement follows, the next injection consists of a mixture of three other type serums, but this change is seldom necessary. The author removes from the donor 500 cc. of blood, and finds he can, without retarding convalescence, take 500 more in 5 to 8 days' time.

As a rule, 150 cc. of serum is used for injection, so each convalescent provides serum for two treatments. He has himself injected 45 natives and has never observed any untoward symptom. Improvement sets in 2–3 hours later and is very decided after 10–16 hours. The later the intervention and the graver the symptoms the larger should be the first injection of serum. The first injection is of 100 cc. in mild cases, at least 150 in others: 24 hours later an injection of 50 cc. is given if the improvement is decided, 100 or 150 in the contrary case. If 48 hours pass without a marked return of symptoms the treatment is suspended. The effect can be gauged by the figures: 55 cases were treated by the subcutaneous way with 14 deaths, 25·45 per cent.; 84 cases were treated intravenously with 8 deaths, 9·5 per cent. Serotherapy does not prevent relapses and secondary localizations. Broncho-pneumonia, however, is often favourably influenced.

iii. The method of treatment described has been applied in 238 cases of pneumonia at the Hôpital de l'Etoile; 50 cc. of blood, with 5 per cent. of citrate of soda, was injected daily into a vein, by means of two glass syringes, each containing 25 cc., till the temperature fell. Symptoms of shock were noted in two instances. The blood was taken from vigorous convalescents 3 or 4 days after defervescence. The mortality remains high, and in the 238 cases was 13·45 per cent. However, in 16 instances of death the pneumonia was complicated with dysentery, bilharziasis or meningitis, and if these be omitted the mortality figure becomes 7·7 per cent. In the last two months he has combined blood injections with intravenous vaccination. In each instance 500 million pneumococci were introduced into a vein on two successive mornings and in the afternoon the convalescent blood; on the third day a milliard of microbes was administered. Forty-four cases have been treated by this "vaccino-haemotherapy" with four deaths.

iv. As illustrating one of the difficulties in appraising a remedy in pneumonia the author compares three epidemics, one very fatal, another less grave and the third mild. His figures concern 1,547 cases observed over a period of three years. Remedial measures are classed in three groups—Divers treatments; colloids; and transfusion of convalescent blood. In the first class, which included vaccinotherapy, no treatment appeared to have much value; 744 cases were treated with 165 deaths, a mortality of 22·17 per cent. Colloids, given intravenously, yielded somewhat better results, 581 cases with 114 deaths, *i.e.*, 19·6 per cent. But the transfusion of convalescent blood, as recommended by SPEDENER, gave still better figures. Of 223 thus treated 34 died, or 15·2 per cent. Eliminating cases where dysentery or bilharziasis were complications, the mortality was 12·1 per cent. The figures show that as far as Congolese and Rhodesians were concerned race had no influence on the result. He thinks that still better results may be obtained and doubts whether repeated injections are superior to a single one. The method, the author admits, is empirical. It takes no account of the different types of pneumococci nor of the fact that in the pneumonic negro pneumococci are frequent in the blood and might create a new focus of infection. However, it gives the best results and must therefore be seriously considered.

v. One hundred and two cases were treated with 15 deaths. Figures of race and of concomitant ankylostomiasis and bilharziasis are given.

A. G. B.

KADANER (M.). **Quelques observations sur la pneumonie des noirs.**—*Ann. Soc. Belge de Méd. Trop.* 1924. Nov. Vol. 4. No. 2. pp. 157–162.

In 1922–23 the author had in the military hospital at Lokandu more than 300 cases of pneumonia. Lokandu is a centre for military instruction, and recruits of several races come in from the districts in driblets during the year. In 1922 the contingent exceeded 1,200 men. Such a recruit, away from home under new conditions of diet and environment, falls an easy prey to disease, and especially pneumonia, which was the cause of 68 per cent. of the deaths in this camp. A table shows that pneumonia increased in prevalence as new contingents came in, a large draft being marked two months later by an increase of incidence and severity. It is not so much the numbers which augment the pneumonia incidence as the association of non-immunes of different tribes. Another table shows that 25, 15 and 12 per cent. of the cases occured in the 1st, 2nd and 3rd months after arrival. Tribes unaccustomed to leave their own country were much more susceptible than others. The women and children also suffered, but to a less extent, and this is attributed to the fact that the women of a tribe kept together and only gradually consorted with those of other tribes, whilst the men were thrown together at once. In short, the author's experience corresponded with that of PEARSON and MOUCHET.* The author thinks that for any camp which receives from time to time fresh non-immune labourers there should be a "camp de préparation" in order that the new may be brought only gradually in contact with the old natives. The paper closes with notes on the symptoms, treatment and complications. Sometimes for the first two or three days of pneumonia, there is no symptom but fever.

A. G. B.

CUNNINGHAM (J.), CRUICKSHANK (J. A.) & RAMAKRISHNAN (S.). **Note on the Types of Pneumococci found in Cases of Pneumonia in Madras, Southern India.**—*Indian Jl. Med. Res.* 1925. Jan. Vol. 12. No. 3. pp. 479–480. [2 refs.]

Lobar pneumonia is not a common disease in Madras; the authors have collected strains from all cases brought to their notice in two years. Of the 40 strains, 11 could not be classed as true pneumococci.

Type I.	Inulin+Bile soluble.			Total.	Inulin+ Bile non-soluble.	Total.
	Type II.	Type III.	Type IV.			
18 per cent 62·06	3 per cent. 10·7	2 per cent. 7·2	6 per cent. 21·4	29 per cent. 72·5	11 per cent. 28·2	40 ...

The proportion of Type I strains is much higher than that found by MALONE in the North of India [28 per cent.; see this *Bulletin*, Vol. 21, p. 464].

A. G. B.

* "The Practical Hygiene of Native Compounds in Tropical Africa." 1923. London: Baillière, Tindall & Cox.

PARK (William H.). **Use of Vaccines and Pneumonia Antibody in the Treatment and Prevention of Pneumonia and the Use of Convalescent Serum in the Prevention of Measles.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 834–849. [United Fruit Company, Boston, Mass.]

This paper deals with lobar pneumonia. There are known to be three dominant types of pneumococci, I, II, and III, which together account for 60 to 80 per cent. of cases of lobar pneumonia. Type IV includes a number of distinct types. The effect of a highly potent serum of one type upon another type of pneumococcus is slight. In South Africa, LISTER has discovered another dominant type, so that investigation in each locality should be made before pneumococcus vaccine or serum is used. In the use of the serum, since there is not time for a test, it is desirable that it be polyvalent as well as potent, but with the crude serum this was impossible. Favourable results have been obtained in Type I cases treated with potent serum, mortalities of 7·5 and 9 per cent. against a natural mortality put at 20 per cent., and it is noticed that the patients change for the better. But the monovalency of the serum is a serious drawback; all patients are subjected to the annoyance of repeated large serum injections and probably to later serum-sickness, while only one-fourth can get benefit. Attempts have therefore been made to discover some practical method of concentrating the antibodies and eliminating the useless substances.

"In May of 1924, Felton, who had worked under Rosenau, and was aided by a grant of money from the Influenza Commission of the Metropolitan Life Insurance Company, published a simple and efficient method for extracting the antibody from the serum. Felton discovered that when potent, freshly-drawn anti-pneumococcus serum was mixed with 10 to 20 times as much distilled water, a dense precipitate of globulin formed, which deposited at the bottom of the holding vessel. This precipitate, after further washing and antifying [sic], was brought again into solution. The final globulin preparation had about 10 times the potency of the original serum and a much smaller amount of proteins.

"Felton has successfully refined the antibody for each of the dominant types of pneumococci, but up to the present time only Type I antibody globulin has been used in the treatment of lobar pneumonia. The tests reported by Felton show that the antibody has the same effect, in combating pneumococcus infection in animals, as the original serum. Felton believes that in addition to removing non-potent patients' other substances by his process, he also removes something which is antagonistic to the antibody, so that the number of units in the refined serum may actually appear to be greater than the number before refining."

A quantity of this serum has been distributed to New York hospitals, and the author describes some of the cases. Pneumococci promptly disappear from the blood and antibody can be demonstrated 24 hours after the injection. From these "it seems clear that the Felton antibody solution administered intravenously in doses of 6 to 10 cc. gives protective character to the blood for pneumococcus Type I." An account is given of the method of administration and of the reactions which follow. Of 19 pneumococcus Type I pneumonias receiving the serum, one only died, a mortality of 5·6 per cent., and clinical impression was favourable. The injections are given once or twice a day. By Felton's method the antibodies of several types may be combined into a potent polyvalent antibody solution. [The paper is ill-named, for measles is not mentioned in the text.]

A. G. B.

PARK (William H.). **Prophylactic Vaccination against Lobar Pneumonia.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 853–856. [United Fruit Company, Boston, Mass.]

By vaccination of small animals it has been clearly established that antibodies protecting from the same type of pneumococci are produced by inoculation of these organisms. Whether freshly prepared or long-stored or from vaccines made from freshly isolated or long-cultivated strains, they are equally effective. In man, only 50 to 80 per cent. of cases of lobar pneumonia are due to the three dominant types; the rest are outside the influence of the vaccine, for it is impracticable to include more than three types. Similarly, it is doubtful whether three injections—expense and patients' objections prohibit more –are sufficient. The author's investigations were made at the instance of the Influenza Commission of the Metropolitan Life Insurance Company. He gave to 1,536 employees three injections of 6,000,000,000 pneumococci of the three types together with two and one milliard of streptococci and influenza bacilli; there were 3,025 controls. In the five months following 11 lobar pneumonias developed among the controls and one among the vaccinated, 0·36 and 0·06 per cent. In the next three months no pneumonia occurred among the unvaccinated and 2 among the vaccinated. It is suggested that the inoculation protected many in the first period, and in the second the protection was on the wane. However, another test—on the inmates of an Asylum for the Insane, 2,000 experiments and 2,000 controls, the injections repeated every six months for three years—showed no appreciable effects from the vaccine. Here Type IV was found to the extent of about 40 per cent., and many of the pneumonias were terminal or broncho-pneumonia and therefore little influenced by vaccination. To this and the peculiar type of the population under experiment the non-success may be due.

A. G. B.

i. MALONE (R. H.). **A Report on the Prophylactic Inoculation of Indian Troops in the Baluchistan District against Pneumonia.**—*Indian Jl. Med. Res.* 1925. Jan. Vol. 12. No. 3. pp. 565–569.

ii. KING (H. H.). **An Analysis of Captain Malone's Results in Vaccination against Pneumonia.**—*Ibid.* pp. 571–577.

i. Pneumonia has for many years been a serious disease among Indian troops stationed on the North-West Frontier, so that it was decided to test the effect of prophylactic inoculation of pneumococcus vaccine. Previous work showed that the types most commonly found were I, II, and IV. In the winter of 1922–3 a trial was carefully planned and carried out in Baluchistan. Details are given of the method of collecting and recording the data. Half of each unit was to be inoculated, the remainder to serve as control. Actually 2,996 were inoculated and 5,227 not inoculated. The vaccine was prepared from two strains of pneumococcus, Types I and II, isolated from fatal cases in 1921, prepared from 72 hour cultures in trypsinized mutton broth plus glucose and blood; the strength was 5,000 millions per cc. Two doses of 1 cc. each were given subcutaneously at a week's interval in October and November 1922. The incidence of pneumonia in the inoculated and the uninoculated to March 31st, 1923, is given in

a table and shows that "the pneumococcus vaccine prepared and employed in the manner described afforded no protection against pneumonia caused by all types of pneumococcus or by the specific types I and II."

ii. The author makes a careful statistical examination of MALONE'S figures and relevant data and concludes that

"(1) The vaccine used was without effect on the incidence and the total mortality of pneumonia.

"(2) The distribution of types of pneumococcus in vaccinated and unvaccinated cases of respiratory disease in the same units was not significantly different.

"(3) The distribution of types in cases was different in followers and combatants, the former having a higher proportion of the three fixed types.

"(4) The mortality of type I was greater than that of type IV.

"(5) The last three conclusions are tentative because larger figures are required."

He notes that most workers now emphasize the necessity of using young (12–18 hours) unautolysed cultures in the preparation of vaccine.

A. G. B.

OLIVER (Thomas). **Influenzal Pneumonia in some of its Pathological Aspects.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 821–828. [3 refs.] [United Fruit Company, Boston, Mass.]

In the discussion which followed the reading of this paper Dr. Milton J. ROSENAU gave an account of his attempts to convey influenza to 99 healthy young volunteers. Old attenuated cultures of Pfeiffer's bacillus were placed upon their nostrils. Cultures freshly isolated from the lungs of fatal cases were transferred to their nostrils and throats. Material from nose and throat and sputum were placed on their lips and nostrils. Similar experiments were repeated with the volunteers on the spot to avoid damage to the virus by delay. Material from the nose and throat of the sick was given the volunteers to drink and was injected under their skins.

"We took 20 of our volunteers and placed them in direct contact with 20 selected cases, or donors. These donors had been selected with all the care that clinical skill could make possible. We took cases as early in the disease as possible,—mild cases and severe cases—all with fever, with leucopenia, with cough and the other indications that we have of influenza. I shall follow only one case, and ask you to remember that the other 19 were doing just the same as this one :—

"This volunteer is brought up to the bed beside the donor and placed on a little stool, both donor and volunteer co-operating. They shake hands and talk close together for five minutes. Then at a signal (ringing of a bell) these two persons (the donor and the volunteer) get as close together face to face as they can, and the patient breathes out quite hard while the volunteer receives this breath, breathing it in five times, and after that the donor coughs right into the face of the volunteer. After about ten minutes he then moves to the next selected patient, so that each volunteer comes in contact with each of the selected cases.

"This being accomplished, we took the volunteers back to the island, watched their temperature, etc., and not one of them took sick in any way. We then thought that perhaps we were not getting the donors as early in the disease as might be desirable. . . . So we tried to get such cases."

All was in vain. Not a single case of infection was procured. Dr. ROSENAU does not wish anyone to infer that influenza is not

spread by secretions from the mouth and nose, but "perhaps there are factors not understood."

Dr. DEEKS drew attention to the treatment of septic conditions, and especially post-influenzal pneumonia, by mercurochrome. It is given in 1 per cent. solution, 1 cc. for every 10 lbs. of weight, by intravenous injection.

A. G. B.

ROY (J. N.). **Le Goundou.**—*Rev. Méd. et Hyg. Trop.* 1925. Mar.-Apr. Vol. 17. No. 2. pp. 33–63. With 1 text fig. [46 refs.]

In his prefatory remarks, Dr. Roy, Professeur agrégé at the University of Montreal, says: The time has arrived to rewrite the chapter of medicine dealing with goundou, and having made the round-trip of Africa taking special notice of this disease, the subject matter of the present article was communicated to the French Congress of Oto-rhino-laryngology in October, 1924, at Paris.

Some of the earlier cases which the author had the opportunity of seeing on the Ivory Coast probably coincided with the first cases of the long series observed and described by BOTREAU-ROUSSEL in the interesting monograph recently reviewed in this *Bulletin* [*ante*, p. 421]. Roy at the time of writing was apparently aware that BOTREAU-ROUSSEL had operated on a large number of cases, but it seems doubtful if he were conversant with the observations and findings contained in that monograph. Roy's observations, in comparison, lack much that those of BOTREAU-ROUSSEL contain and his total of cases was only 34. He finds the disease commoner in males than females, a statement of little value when dealing with such small numbers. He accepts the congenital case described by STRACHAN, and is apparently satisfied that the goundou-like condition which has been described as occurring in monkeys has the same pathogeny. Historically he adds nothing new, and geographically he omits from the list of countries in which goundou occurs certain colonies such as Portuguese East Africa and Nyasaland. From two cases typical paranasal tumours were removed and examined, a full description being given of the pathological changes found. These tally with those given by BOTREAU-ROUSSEL. Microscopical examination of material stained for spirochaetes was negative, but in a section stained with haematin-eosin and safranin three slightly oval, nearly circular bodies were seen coloured yellow by safranin. These had a diameter of 25–30μ and possessed a well-marked highly refractile limiting membrane. They are mentioned without insisting on their possible significance.

Roy's clinical findings are much the same as those of BOTREAU-ROUSSEL: a generalized enlargement of lymphatic glands was common; an associated osteitis affecting other bones both long and short, but never the vertebrae, occurred in a proportion of cases; he, however, apparently never saw the palatal vault encroached on nor any of the extreme forms figured by BOTREAU-ROUSSEL. The chief point, however, in the paper lies in the fact that Roy believes that the etiology of goundou is unknown, and while excluding syphilis and other diseases as possible etiological factors, he equally has no hesitation in asserting that the disease is not due to yaws. If, however, the histories of his cases are examined, the following points emerge: Of the total 34 cases (*a*) 24 had goundou, (*b*) 7 had goundou plus osteitis of other bones, (*c*) 3 had osteitis without goundou. All the

cases under (*b*) and (*c*), 10 in all, had had yaws, and of the 24 under (*a*) 14 acknowledged having had that disease. Of the remaining 10 cases stated not to have had yaws, 3 individuals aged 23, 28 and 30 years stated that they "did not remember" whether they had had the disease; the other cases were aged 25, 23, 23, 22, 15, 12, 11 years respectively, and while denying yaws, may have been affected in early childhood and forgotten the fact, just as people in this country forget whether they have had measles. In those patients who had had yaws, the common sequence noted by BOTREAU-ROUSSEL, of yaws followed in a year or two by the appearance of goundou, was a common history. There is a very great deal of evidence therefore, on the author's own showing, in spite of his opinion to the contrary, that as BOUTREAU-ROUSSEL holds, goundou is a manifestation of yaws.

Roy assigns a good deal of importance, as evidence against the yaws theory, to the presumed congenital case described by STRACHAN. Of this West Indian negro child, aged three years when seen in 1894, that observer wrote: "These masses were congenital and had only grown with the child's growth and not apparently more rapidly than the bone of which they proved to be a portion." This statement obviously reflects what he was told by the mother, and in the absence of any other evidence that goundou is congenital is of very doubtful value. Roy again adduces as evidence against yaws being the cause of the disease the observation that goundou does not respond to treatment by iodides and salvarsan derivatives, and sides with BRUMPT, who, under the designation of "pseudo-goundou," would place those cases which have been found to respond to such treatment. This appears to be begging the question, and the true explanation is probably to be found in BOTREAU-ROUSSEL'S observation that in an early stage, when the pathological process is active and bone formation has not gone far, treatment is effective, whereas in other cases in which the active stage has come to an end treatment will have no effect on what might be termed the bony scar. The author, while accepting the fact that there may be a generalized osteitis of the same nature as goundou, does not seem to realize that such cases resemble those described as due to yaws all over the tropics. He believes, too, that the paranasal type is much commoner than the generalized form, an opinion in support of which he offers little evidence.

This paper by Roy, coming after BOTREAU-ROUSSEL'S monograph, appears to add little that is new to this interesting subject. It has been subjected to a critical review with the idea of stimulating observations elsewhere. What is perhaps most wanted is a careful study of the question among those inhabitants of the Ivory Coast, where yaws is endemic, and whence BOTREAU-ROUSSEL drew his cases. It would promise a most interesting field of investigation.

H. S. Stannus.

BOTREAU-ROUSSEL & CORNIL (L.). **Considérations anatomiques sur la structure des tumeurs paranasales du Goundou.**—*Bull. Soc. Path. Exot.* 1924. Dec. 10. Vol. 17. No. 10. pp. 863–868. With 2 figs.

A histological study of material obtained from eight cases of goundou occurring on the Ivory Coast, from which the authors deduce that these paranasal outgrowths are not truly tumour formations, but the result of

an inflammatory hyperplastic osteitis showing changes in the bony trabecula and medulla comparable with those of a syphilitic osteitis. They believe that their findings support the view of a framboesial origin. The report is full and illustrated by two figures showing the changes described.

H. S. Stannus.

BLACKLOCK (D. B.). **Appendix X.—Report on an Investigation into the Prevalence of Goitre in the Protectorate of Sierra Leone.**—*Sierra Leone Ann. Med. & San. Rep. for the Year 1923.* pp. 71–80. With 2 maps & 6 figs.

The author discusses past and present theories of the causation of goitre, especially the iodine deficiency theory, which presumes a natural lack of iodine in the food and water of certain places and the

Group of young women at Kaiyima in Sierra Leone, all wives of one chief and all affected with goitre. There were seven of his wives affected, but two are out of the picture.

[Reproduced from *Sierra Leone Annual Medical and Sanitary Report*, 1923.]

infective theory, which admits the deficiency of iodine, but supposes it to be produced by the intervention of faecal organisms which the subject has ingested. Goitre is prevalent in the mountainous Konno and Koinadugu districts of Sierra Leone, and the author's plan was

to follow up a river, the Bagwe, and investigate the villages on its banks, with the object of testing the natural deficiency theory. Of 37 villages examined 22 had cases of goitre in a population of 2,465; in 1,532 males there were 161 cases, or 10 per cent., and in 933 females there were 222, or 23 per cent. The several percentages are set out in a table which shows that in one village (Kaiyima) more than half those examined were affected. The female preponderance is believed to be real, and this corresponds to the findings elsewhere. A table of the approximate age incidence shows that, whereas up to the age of 10 the sexes are equally attacked, the period 11-40 gives a much larger incidence in females, and in this connexion it is noted that the females come more intimately in contact with water than the males. The tribal incidence varied greatly; the Konnos had the highest percentage, males 13, females 45. Myxoedema was not observed, and cretins but rarely; such, however, might not survive among primitive people. Two cases of exophthalmic goitre were seen.

The disposition of the goitrous villages on the Bagwe was such that it is improbable that natural deficiency of iodine or of anything else will account for the disease; villages on the watershed were free; but the habits of the Konnos are calculated to produce an unusual amount of pollution of water by faecal organisms; not only is it "the invariable custom for people of both sexes to perform their natural functions in water," so that special portions of streams are set aside for that purpose, but streams selected are frequently sluggish and the latrines situated above the drinking places, as is illustrated by a sketch map. At the village called Kaiyima, where more than half those examined were goitrous, collateral evidence of faecal contamination of water was sought by examination for *A. lumbricoides* and *E. coli*; of 144 persons, 86 harboured that, and 102 this parasite, indicating a serious amount of infection via the mouth. The other tribes in this country use land latrines, so that the degree of pollution of water varies. The author notes that goitre impairs the subject's usefulness, and lessens resistance to fatigue. He concludes that:—

"If iodine-deficiency is accepted as the cause of goitre, the facts here would be best explained on the theory that the deficiency is either an artificially produced one, or else one produced by natural agencies not understood which fail to come into operation at the greatest altitudes."

He suggests "a permanent sanitary demonstration" at some heavily infected village to show the natives the advantages of keeping the water supply free from pollution and of returning excreta to the land, and the introduction of iodine into the salt, which is all obtained from Freetown.

A. G. B.

DE ALMEIDA (M. do Nascimento). **Contribuição para o estudo da "Sassa" (bócio endémico) no planalto de Benguela.** [Endemic Goitre in the Elevated Plains of Benguela.]—*Revista Méd. de Angola.* (No. especial 1e Congresso de Med. Trop. da Africa Ocidental. Vol. 5. 9a. 10a. e Sessão de encerramento.) 1923. Aug. No. 4. pp. 95–103.

Goitre is found in circumscribed areas of the Districts of Benguela and Bié, in Luimbale, Bailundo and Andulo, at a height of 1,200 to 1,800 metres. One hilly district goes by the name of Omunda-ia-Sassa ("Goitre Mountain"), owing to the fact that practically all

the natives of this region are affected. The cause of the disease and of its peculiar limitation is obscure. Thus, amongst a considerable number of villages in the neighbourhood of the Catholic Mission of Bailundo, whose inhabitants drink the water of the streams arising in the mountains, cases are few or absent, but several are seen amongst those who live further away, yet drink from the same water when the streams have united to form small rivers. Nevertheless, the idea is generally held that it is the water—the presence of some noxious substance, or the absence of some necessary constituent—which is responsible. Neither age nor sex exempts, cases being seen amongst men, women and children. Many of those living to old age have had the swelling since childhood. Even though the enlargement becomes very great it seems to affect their vitality little, if at all. Europeans are apparently never attacked, even though they drink the same waters, and in spite of the fact that some revert and live the life of the natives.

The missionaries treat the patients by administering potassium iodide internally and applying tincture of iodine externally, and claim that the swelling disappears if treatment is undertaken early. Short notes are given of 19 cases, their ages varying from 12 to 70 years, in whom the condition had existed for period of from 2 to nearly 50 years.

H. Harold Scott.

BUSSA-LAY (Enrico). **Il gozzo in Eritrea.**—*Policlinico.* Sez. Prat. 1925. May 25. Vol. 32. No. 21. pp. 735–741. With 9 text figs. [10 refs.]

Goitre in Eritrea is endemic, particularly in Asmara, Saladio and Scicchetti. The author has seen it at all ages, from childhood to old age, but the percentage is greater in adults and in women than in men. Details of his operative procedure are given, and a table of 16 cases. The paper contains some good illustrations of the condition as seen before and after operation. In the author's opinion medical treatment is not of much avail.

H. Harold Scott.

NINO (Flavio L.). **A propósito de la campaña profiláctica emprendida por el D.N. de H. contra el bocio y el cretinismo endémico en el país. Observaciones de un viajero a reg. bociógenas.**—*Semana Méd.* 1925. Jan. 8. Year 32. No. 2 (1617). pp. 91–100. With 7 figs., 1 map & 1 chart in text. [11 refs.]

The author travelled through parts of the Province of Tucumán, Argentina, to study the incidence of goitre and cretinism, which in several districts was very high. Taking all ages into consideration and various degrees from visible enlargement of the thyroid, including also those with signs of cretinism and mental deficiency, he found 62·3 per cent. to be affected, and among the young adults, 80 per cent. He gives notes of 10 cases showing that the leucocytic formula remains practically normal unless definite symptoms of cretinism are present when the polymorphonuclears are reduced, and the lymphocytes increased; in advanced cases and in imbeciles the normal proportions may be reversed. He found that animals, particularly dogs and goats, were also goitrous. As regards treatment, he formulates plans for asylum-colony segregation for advanced cases and local dispensaries for those in the earlier stages.

H. Harold Scott.

DAVIES (E. A.) & BELL (P.). **Intravenous Injections of Sodium Iodide in the Treatment of Goitre.**—*Indian Med. Gaz.* 1925. Apr. Vol. 60. No. 4. pp. 163–165.

Cases of goitre in natives of the Chin Hills, Burma, received a course of intravenous injections of 5 to 7 grs. of sodium iodide with apparent benefit. The drug was given also by mouth and subcutaneously.

A. G. B.

PRUYS (H. S.). **Ondervoeding en schildklier.** [Subnutrition and Thyroid Gland.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 1. pp. 19–35. [2 refs.]

Basing his opinions upon those expressed by Ivo Geikie COBB in his work, "The Organs of Internal Secretion," the author ascribes a multitude of symptoms to disordered function of the thyroid gland. Psychic alterations of neurasthenic type, giddiness, hypersensitivity to cold, a chronic affection of the skin [of which no exact description is given], oedema, reduced amount of urine or anuria, discoloration of the hair, fragility of the nails, slackness of muscles and ligaments, are attributed to this cause.

During the years 1920–1923 Pruys met with many cases of subnutrition among the population of the hills round Wonosobo (Java). The high prices of food in these years did not interfere with the nutrition of the native farmer, but they did with that of the day labourer. This class, as well as the pauper, were chiefly concerned. The native pauper never suffers from a single disease; therefore several cases of oedema could be attributed to other causes (hookworm, nephritis, etc.), but the remarkably large group of unclassified dropsy cases urged the author to look for some special reason. He thinks that the general subnutrition caused secondary disorders of the thyroid function and provides proof for his opinion by the rapid beneficial influence of thyroid preparations (once or twice per day 50 mgm. of the dry substance) in these cases.

W. J. Bais.

PIGEON (E.) & LE BOURDELLES (A. C. B.). **A propos de la lymphogranulomatose inguinale subaiguë de Nicolas et Favre.**—*Arch. Méd. et Pharm. Milit.* 1924. Dec. Vol. 81. No. 6. pp. 776–783. [4 refs.]

The authors discuss the subject of climatic bubo, with particular reference to a memoir by the senior author and TANTON on about 200 cases observed by them in Algiers (*Arch. gen. de méd.*, No. 2, Feb., 1908), as a preliminary to an account of 6 recent cases in which once more a careful bacteriological examination was made [see also this *Bulletin*, Vol. 20, p. 432]. In none of these cases was there any concomitant lesion of the genitalia or any abrasion; in all, the histology was that of periadenitis and congestion of the glands, with points of suppuration. In three of the cases the tissues reserved for bacteriological investigation were not properly aseptic when received; in one of these a streptococcus was found in association with a diphtheria-like bacillus, in another putridity, in the third no organism of any kind. In the other three cases, in which the material examined was perfectly aseptic, no organism could be discovered in any of the nine different culture media used, nor could any effect be produced on a guineapig. Examination of fresh pus from glands and of variously stained pus was equally fruitless, and the authors therefore think that the true pathogenetic agent of the disease is still to be discovered. As regards treatment, the course recommended is early diagnosis and immediate excision (*l'opération précoce*).

A. A.

FRANCESCO (Virgillo). **Sopra alcuni casi di linfogranuloma inguinale subacuto.**—*Ann. di Med. Nav. e Colon.* 1925. Jan.-Feb. Year 31. Vol. 1. No. 1–2. pp. 1–16. With 2 figs. [33 refs.]

Seven cases are described by the author as suffering from subacute lymphogranuloma, probably of sexual origin and identical with climatic bubo. The reason for the name is not very clear. In five of the cases there were either abrasions on the glans or prepuce, or a venereal ulcer, or sores on the legs to account for the glandular enlargement; the sixth had suffered previously from gonorrhoea. In five, also, pus was found on incising the swelling.

H. Harold Scott.

VIOLATO (Andrea). **Linfogranulomatosi inguinale benigna.**—*Ann. di Med. Nav. e Colon.* 1924. Nov.-Dec. Year 30. Vol. 2. No. 5–6. pp. 259–275. [20 refs.]

Here is recorded the case of a man of 34 years with unimpeachable history in whose left inguinal region there developed in the course of a fortnight a glandular swelling, 12 by 7 by 5 cm., the skin over it being reddish-violet in colour. At the end of a month, as no change had resulted from treatment, the author decided to extirpate it and found it to be made up of five or six small glands adherent to each other. On section they were seen to contain small pockets of pus, the cellular constituents of which, however, were mononuclears rather than polymorphonuclears. No organisms were seen and all attempts at culture proved negative. The author discusses the question as to the possibly tuberculous nature of these swellings, and holds that the organisms described by others have not been proved to be causative of the condition.

H. Harold Scott.

SINCLAIR (Charles G.) & MAXCY (Kenneth F.). **Mild Typhus (Brill's Disease) in the Lower Rio Grande Valley.**—*Public Health Rep.* 1925. Feb. 6. Vol. 40. No. 6. pp. 241–248. With 1 map. [4 refs.]

"Tabardillo" is known to have existed in the highlands of Mexico since the great epidemic of 1576, but has been limited to the plateau. It was shown a few years ago that the body louse, common in the highlands, is almost unknown among the low-country peoples, and this seemed to explain the restricted prevalence. The authors, in the summer of 1924, studied an outbreak of fever at and near Rio Grande City, Texas, which has an elevation of about 160 ft. Notes were made of 20 cases, 14 of which were in Mexicans. The symptoms correspond closely with BRILL's description. The onset is abrupt, with severe headache and fever which reaches its maximum in the first week, becomes remittent in the second, and returns to normal in about 14 days (7 to 25).

"Eruption appeared on the third to sixth day, usually first on the abdomen, chest, and upper arms, later spreading to the back and extremities, rarely to the face. In some cases a preliminary dusky mottling of the skin was noted, particularly in the interscapular region of the back. The spots appeared at first small and discrete, could not be felt, were apparently erythematous in character, dull red in colour; later they became irregular in size, some slightly raised, colour becoming darker, and some did not disappear on pressure, being petechial. In two cases multicoloured stains remained in the interscapular region after the receding of the rash, as if there had been subcutaneous extravasation. The rash usually lasted until convalescence was established."

Only three were critically ill, and there were no deaths. Mental symptoms were insignificant. Stress is laid on the extreme mildness of this disease compared with "tabardillo." Of 15 cases tested by Weil-Felix 12 were positive at titres between 1 : 160 and 1 : 5,000, and 3 were doubtful (less than 1 : 80). Seven guineapigs inoculated from four patients had no fever, and 5 which were afterwards tested with known typhus virus showed no evidence of immunity. When the individual cases were studied it was sometimes possible to demonstrate close association, but there was usually only one case in a family. In 12 of the 20 families the head louse was present; the body louse was sought but not found; which findings are the rule in the lower Rio Grande. The Mexican physicians have recognized the existence of this disease in the last 10 years, chiefly in the summer and autumn.

The authors therefore believe that a mild strain of typhus—perhaps permanently attenuated—is endemic in the lower Rio Grande valley, and occurs sporadically. The head louse, which NUTTALL and BACOT have shown to be a race of the species *humanus*, and not specifically distinct is, it seems probable, the vector.

A. G. B.

ALQUIER (C.). **Le typhus exanthématique dans la région de Chellala (1901-1921). (Notes épidémiologiques et cliniques d'un médecin du bled.)**—*Arch. Inst. Pasteur d'Algérie.* 1924. Dec. Vol. 2. No. 4. pp. 523–563. With 8 text figs. & 1 map in text.

This long paper gives an interesting clinical account of typhus in a district, inhabited chiefly by Arab nomads, south-west of Algiers. Here the natives travel for weeks without taking their clothes off, and in the numerous folds of these garments live many colonies of lice. These do not seriously incommode their carrier, who "rarely gives himself to the chase," and even when he does so contents himself with throwing the insects to some distance. Indeed, virtue is attributed to them, in that they suck "bad blood." Head lice are rare. After the war there was great prosperity, and the prosperous put their money into stock. In the spring of 1920 the rains failed, the animals were driven to marshy districts where to the ravages of famine were added those of parasitic disease; famine and disease among the beasts was followed by famine among men, and the district became full of half-starved beggars, and deaths were very numerous. In January, 1921, typhus was reported 100 kilos away, but attempts to louse the people, at first well supported, failed from their want of persistence. The early cases were among the well-do-do and were regarded as enteric. In the first the diagnosis was "puerperal fever," then "typhoid," and only after death, "typhus." These were the cleanest people, but they had daily dealings with the beggars. Then the beggars themselves became ill, but still with the initial symptoms of typhoid, the patients not being incapacitated till the 3rd, 5th, or even a later day. Only after a month did the onset become of the classical type. The epidemic came to an end in July, because of immunization of those who escaped, the effect of summer heat on the lice, the improvement of the economic position, or the measures taken.

The author saw in the 20 years of his residence 490 cases, and 400 of these in 1921. Second attacks took place in many instances, including his own case (1916 and 1921). He gives full clinical notes for which

the paper must be consulted. Two-fifths of the cases would not have been recognized unless carefully examined, and most of the patients were able to go about their business. Probably yet lighter cases were missed. Twelve per cent. died. Arteritis was quite common. A severe and unusual sequel, illustrated by several photographs, was gangrene, the result of arteritis ; 14 such cases were seen, in 10 of which both feet were affected. In the person of the author the gangrene did not take place till two years after his second attack ; in other cases the course was rapid.

Treatment consisted chiefly of " sun, air and water "—the prescription of the natives themselves. They refused to remain inside the hospital, but lay on the grass outside each with his vessel of water, the strong supplying drink to the weak.

A. G. B.

LEDINGHAM (J. C. G.) & FRASER (F. R.). **Tularaemia in Man from Laboratory Infection.**—*Quarterly Jl. Med.* 1924. July. No. 68. pp. 365–383. With 2 plates & 3 charts. [20 refs.]

American work on Tularaemia, the comparatively recently discovered plague-like disease of North American rodents, its causal organism (*Bacterium tularense*), and its modes of transmission between rodents and to man have already received considerable notice in this *Bulletin* (Vol. 19, pp. 442–445 ; Vol. 20, p. 664 ; Vol. 21, pp. 477 & 922).

We have here to direct particular attention to a very finished study of the historical, clinical, bacteriological and serological aspects of the disease based upon three cases of recent occurrence in London.

The patients were highly skilled members of the staff of the Lister Institute who had been handling cultures or infected animal material. The clinical features of two of the cases are described ; in these the disease " was marked by the extreme slowness of the convalescence, by recurring mild attacks, and the prolonged period of over a year during which there was at least partial disability for work."

The histology of the lesions in guineapigs and mice is discussed in detail, but has already been noticed here (*Bulletin*, Vol. 20, p. 665) ; attention is drawn to their close resemblance to those caused by *B. pestis*. Laboratory diagnosis and serological tests also are treated very fully ; for, although tularaemia has not yet been detected in rodents outside the U.S.A., it is " well to remember the possibility of some such origin in obscure cases of human infection with septicaemic features following insect bites " elsewhere.

Modes of transmission among animals and infection of man are also considered. Among laboratory workers, who rigidly observe all ordinary precautions, the authors think that a respiratory infection is possible, since animals not infrequently cough while undergoing anaesthesia, and the lungs of infected animals undoubtedly contain the virus.

A. A.

SHELTON (Turner S.). **Tularemia.**—*Jl. Amer. Med. Assoc.* 1925. Apr. 4. Vol. 84. No. 14. pp. 1019–1020. With 2 text figs.

Report of a case from Virginia. The patient had dressed a locally-caught (not bought) rabbit about a month before her illness began. Diagnosis by agglutination test.

A. A.

FRANCIS (Edward). **Tularemia.**—*Jl. Amer. Med. Assoc.* 1925. Apr. 25. Vol. 84. No. 17. pp. 1243–1250. With 3 text figs. [28 refs.]

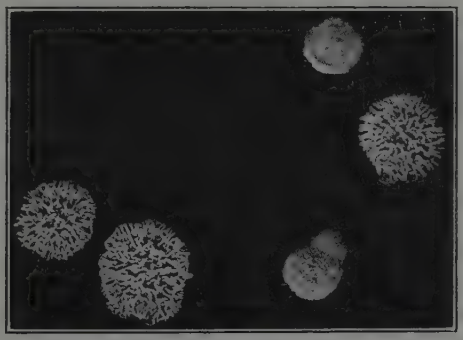
A monograph of the disease. The original material has already been noticed in this *Bulletin* (Vol. 19, pp. 442–444, and Vol. 20, pp. 664–665).

A. A.

i. STANTON (A. T.) & FLETCHER (William). **Melioidosis, a Disease of Rodents communicable to Man.**—*Lancet.* 1925. Jan. 3. pp. 10–13. With 1 fig. and *Bulletins from Inst. for Med. Res. Federated Malay States.* 1924. No. 5. 7 pp. With 9 plates [7 refs.]

ii. —— —— & KANAGARAYER (K.). **Two Cases of Melioidosis.**—*Jl. of Hyg.* 1924. Dec. Vol. 23. No. 3. pp. 268–276. With 4 plates. [6 refs.]

i. Melioidosis—first recognized by WHITMORE and KRISHNASWAMY, in 1912, in Rangoon, and originally described by WHITMORE, in 1913, as a "Glanders-like disease occurring in Rangoon"—is a fatal infection of rodents and man, of which up to the present only 50 human cases have been carefully observed (38 in Rangoon, 11 at Kuala Lumpur, and 1 in Singapore). Though thus apparently limited to the Burma-Malay region, it is unlikely, as the authors remark, that the geographical range of the disease is really so narrowly restricted. Of the 50 recorded cases 25 were Indians, 23 Burmans, 1 a Chinaman, and 1 a European; only 5 were recognized during life (and those only by bacteriological or serological methods) and all but 2 were fatal; and of these two, one recovered only after a long illness, and the other is still, after two years' suffering, an invalid, with sinuses and chronic suppuration in the bones of his legs and feet.

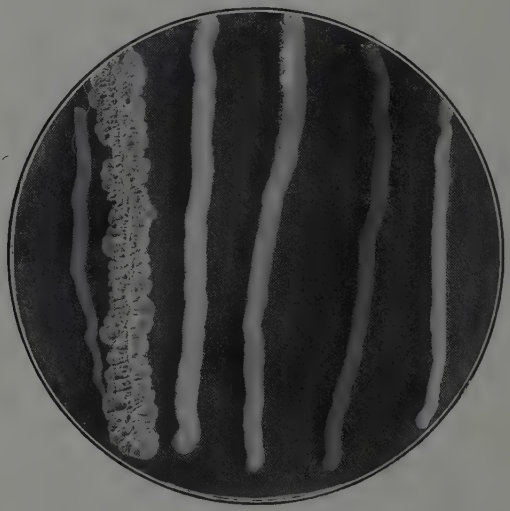


Bacillus whitmori: mucoid and corrugated colonies on glycerine-agar plate.
[Reproduced from *Bulletins from the Institute for Medical Research,* F.M.S., No. 5 of 1924.]

The lesions of the disease resemble those of glanders, and the causative organism—originally isolated by WHITMORE—is a small Gram-negative bacillus, named by the authors *B. whitmori*, about the size and shape of the bacillus of glanders, yet sometimes strongly resembling that of plague, but distinguishable from both by its active

motility in young cultures, and by the characteristic wrinkled and puckered colonies formed on glycerine-agar. The bacillus is found in the lesions, as well as in the blood, sputum, urine, bile, and sometimes in the intestinal contents, and the disease can be accurately determined only by cultivation of the bacillus, since the symptoms vary according to the part or organ attacked.

How man is infected is still unsure. In Rangoon, since a large proportion of the cases were morphinics, the disease was called morphine-injectors' septicaemia and infection was supposed to be carried by the syringe; the authors, not having met with a primary lesion, and judging from the severe gastro-intestinal symptoms that so often are precursory, think it probable that infection is carried by food contaminated by rats.



Corrugated and mucoid cultures of *B. whitmori* on glycerine-agar with *B. mallei* for comparison, seventy-two hours' growth at 37°C. From left to right: *B. mallei*, strain A; *B. whitmori*, corrugated; *B. whitmori*, corrugated; *B. whitmori*, mucoid; *B. mallei*, strain, Muktesar; *B. mallei*, strain, Java.

[Reproduced by permission from the *Lancet*.]

Laboratory animals are readily infected by feeding, inhalation, scarification, and inoculation. Subcutaneous inoculation causes very rapidly fatal septicaemia; scarification is followed by local induration and caseous ulceration, subsequent suppurating lymphadenitis, and death in about three weeks; infection by feeding or by inhalation is mortal in two weeks or less, with caseous ulceration of the infected mucosa and caseous deposits in the lungs and sometimes in other organs.

There are no characteristic symptoms. "Some of the most acute cases resemble cholera or plague; others, which have a high temperature from the beginning, resemble malaria, enteric fever, or general tuberculosis; yet others find their way to the dysentery wards. If pustules and abscesses appear a diagnosis of acute glanders may be made,

while the bone lesions which appear later on resemble tertiary syphilis or chronic tuberculosis. Delirium is a common symptom, and one unfortunate patient was supposed to be afflicted with acute mania."

As regards the morbid anatomy, the characteristic lesion is a small caseous nodule penetrated with fragments of chromatin and circumscribed by a zone of congestion. The nodules have been found almost everywhere except the brain, and they become confluent as large caseous masses, prominently in the lungs—this massive caseation of the contents of the thorax being a characteristic phenomenon in rats. In man, but not in animals, the confluent nodules sometimes break down into abscesses (liver, spleen) or superficial ulcers (caecum). In rats, confluent nodules in the spleen and haemorrhagic enlargement of the cervical and axillary glands often have a striking resemblance to plague lesions.

[KRISHNASWAMY (*Ind. Med. Gaz.*, Vol. 52, 1917, p. 297) speaks of having seen over 200 cases of this disease in Rangoon. He also mentions subcutaneous abscesses (distinct from ulcerations originating in wounds made by hypodermic syringes) as occurring in any part of the body. KNAPP (*Op. cit.*, Vol. 50, 1915, p. 287) in an account of a case also mentions subcutaneous abscesses and, another significant feature, ulceration of tonsils.]

ii. Neither of the cases of melioidosis here recorded was diagnosed in life. One lesson drawn by the authors from them is that this disease may sometimes have been mistaken for hepatic abscess—at any rate, in Malaya.

Case 1 was a robust Tamil cooly, about 40. He had irregular fever, pain in the epigastrium, and was constipated; no malaria parasites, and no physical signs except enlarged spleen. Later appeared signs of consolidation at the base of both lungs, and diarrhoea. Fatal collapse at the end of the 3rd week.

At the autopsy were observed consolidated patches composed of minute suppurating tubercles in the lungs; aggregations of similar tubercles and two circumscribed abscesses in the liver, also thickening of the gallbladder; septic infarcts and abscesses in a much enlarged spleen; superficial ulcers in caecum. *B. whitmori* was cultivated from lungs, spleen, liver and gallbladder and verified by inoculation tests.

Case 2 was a well-nourished and muscular European of 42, who had last been living in a mining village, in a house infested with rats. Onset of illness was gradual—pain after food, occasional vomiting, diarrhoea; fever, fluctuating at first, then never sinking below 100° F., with rigors and sweats; no parasites in blood or stools; liver enlarged. Death in a low delirium on 25th day.

At the autopsy two large abscesses, yielding *B. whitmori*, but not amoebae, were found in the liver, and the gallbladder was thickened. The identity of the bacillus was confirmed by inoculation tests.

The authors note that melioidosis, like tularaemia, is another item against rodents, and they also remind us that great epidemic diseases may again issue, as they must always have issued, from small and confined beginnings.

[The two diseases, melioidosis and tularaemia, seem to have many points in common—as the varied modes of infection, the septicaemic fever with a period of 2-3 weeks, the suppurative lymphadenitis following infection by scratch or prick, the miliary nodules in the viscera in a generalized infection, the pathological changes in rats (melioidosis) and guineapigs (tularaemia) strongly resembling those seen in plague (Stanton & Fletcher) and "almost indistinguishable from those caused by the plague bacillus"

(McCoy) respectively, the tardy recovery and protracted convalescence, and the difficulty of diagnosis except by laboratory methods. So far as man is concerned the infection in tularaemia seems to be more inevitably catching, and that of melioidosis more extensive and rapidly destructive locally and more severe and disastrous in its general effects; melioidosis also seems to have a predilection for the lungs, though in a fatal case of tularaemia (see this *Bulletin*, Vol. 21, p. 922) it is recorded that nodules varying in size from a pea to a walnut were found in the lungs. The two diseases, along with glanders, appear to be species of one genus, and any one who reads the 48th chapter of Thucydides' History will be inclined to suspect that the genus in question is considerably akin to the Athenian Plague. This disease is described by Thucydides as extremely catching—"men afraid to visit each other"; cp. tularaemia; beginning with bloody tongue and throat (cp. ulceration of tonsils); going on to pain in chest, hoarseness and cough (cp. broncho-pneumonia); severe gastro-intestinal symptoms, followed later by ulceration of bowels and severe diarrhoea; small pustules and ulcers of skin (cp. subcutaneous abscesses in any part of body); and when the disease was not mortal it settled in other parts of the body, including fingers and toes (cp. slow recovery, and chronic suppuration in bones of legs and feet).

"Melioidosis" is an ugly disease, but the authors have given it an unnecessarily inelegant name. They derive their name from μῆλις (=a distemper of asses, *i.e.*, glanders), the inflexional stem of which is μηλιδ-, so that the name from this derivation ought to be melidoidosis. "Malioidosis," from μᾶλις, which is identical with μῆλις in meaning and has μαλί as the inflexional stem, would have been better.]

A. A.

Stanton (A. T.) & Fletcher (William). **Melioidosis and its Relation to Glanders.**—*Jl. of Hyg.* 1925. Apr. Vol. 23. No. 4. pp. 347–363. With 1 plate. [4 refs.]

This paper contains the results of cultural and serological comparisons of the glanders bacillus (*B. mallei*) and the melioidosis bacillus (*B. whitmori*) along with some comparative experimentation on animals. Five strains of *B. mallei* of widely diverse geographical origin were compared with 14 strains of *B. whitmori* of diverse animal derivation from Kuala Lumpur and Singapore.

It is impossible to distinguish the lesions of melioidosis from those of glanders even by the microscope. Clinically the two diseases are alike, but melioidosis is generally more fatally acute. All attempts to infect horses with melioidosis have been unsuccessful.

The serological reactions tested (agglutination, absorption and complement-fixation) showed that the cultures of *B. whitmori* were homogeneous, but that the five strains of *B. mallei* could be separated into two sub-groups. One of these sub-groups, comprising strains from Java and Muktesar (N. India), is very closely related, serologically, to *B. whitmori*; the other sub-group, comprising three strains of diverse origin from the Lister Institute collection, is only distantly related to *B. whitmori*.

The authors' conclusion is that the causative organism of glanders is not always one and the same; that a group of organisms having different serological properties has been included under the name *B. mallei*, and that *B. whitmori* is a member of the group found in rodents and man.

A. A.

COLEMAN (R. B.) & BATEMAN (J. E.). **Splenectomy in Egyptian Splenomegaly. Seventy Cases.**—*Lancet.* 1924. Nov. 29. pp. 1116–1117. [6 refs.]

The authors are in charge of the C.M.S. Hospital, Old Cairo, where 20,000 patients from all parts of Egypt attend yearly. They find that splenomegaly is most common on the eastern side of the Delta; the majority of operation cases come from near Zagazig and Dekernes. The average age of the 70 cases, all but 13 being males, was 19; they believe the sex disparity to be a real one and note that bilharziasis also affects chiefly males. Most splenomegaly cases develop ascites and extreme hepatic cirrhosis a few years later.

The blood was usually examined after treatment for ankylostomiasis and bilharziasis. The average was: Red count, 4,000,000; colour index, 65; leucocyte count, 3-4,000. A considerable leucocytosis is believed to be a bar to operation, but the authors have removed spleens with success from 10 patients with cell counts between 7 and 10,000. Only two cases of leukaemia were discovered in this series.

The 70 cases, all seen between 1920 and 1923, represent the cases suited for operation; an equal number were refused owing to ascites, pellagra, heart disease, or debility. An injection of pneumococcal vaccine is always given the night before operation; before this precaution two cases were lost from pneumonia. For details of the operation the paper must be consulted. The spleens removed averaged $3\frac{3}{4}$ lbs. (extremes, $1\frac{1}{4}$ and $12\frac{1}{2}$ lbs.). The total mortality was 11, or 15·7 per cent.; nearly all the deaths occurred between the second and fourth day, and were considered to be due to late shock. A "fair number" of operation cases have been traced and examined: they were nearly all well and strong, and in none has ascites appeared.

The authors conclude "that splenectomy is the most satisfactory treatment of Egyptian splenomegaly, that great care is essential in the selection and preparation of cases, that the mortality is still high, but untreated cases so early develop extreme ascites that the operation is justifiable, that a small degree of leucocytosis is not necessarily a contra-indication to operation."

[The paper is a model of conciseness. The authors were evidently unaware of the recent work of DAY (this *Bulletin*, Vol. 21, p. 938).]

A. G. B.

CHIANG (H. T.). **Splenomegaly with Ascites.**—*Nat. Med. Jl. China.* 1924. Dec. Vol. 10. No. 6. pp. 387–390.

Splenomegaly with ascites seems to be not rare in Wu-Han, and its exact causation requires study. The author has observed 30 cases from the parasitological aspect, 10 being urban and 20 from the country, and the ages ranging from 17 to 64 years; parasites were found in 77 per cent. of them, very often mixed infestations. The parasites observed were *Schistosoma japonicum* (56·5 per cent.), *Ancylostoma duodenale*, *Ascaris lumbricoides*, *Trichocephalus trichiuris*, *Fasciolopsis buskii*, and *Entamoeba histolytica*. *S. japonicum* occurred in all but four instances as a mixed infestation, and in the author's experience such mixed cases are hard to cure—are, perhaps, not curable—though they may be improved for a time by tartar emetic.

A. A.

SPACKMAN (W. C.). With Pathological Notes by MACKIE (F. P.). **Gaucher's Type of Splenomegaly in a Mahratta Village, with a Case treated by Splenectomy.**—*Indian Med. Gaz.* 1925. Feb. Vol. 60. No. 2. pp. 69–72.

A village near Nasik, formerly inhabited by 400 people, Mahrattas and others, was abandoned because of a disease which carried off a number of young male Mahrattas and earned for the village the name of "potedhagur" (*pote*=big stomach). The disease begins early with a lump in the left side, always in Mahrattas, and is ultimately fatal. Malaria is well known here; kala azar is absent. A table shows the distribution of 12 cases in 3 families, all males, and in one family 4 brothers. The commencement was between the ages of 1 and 15, and life was rarely prolonged more than 15 years. Only one case was seen by the author.

A boy of 16, with complaint of abdominal tumour and weakness, beginning at the age of 6. A low type of fever more or less continuous. No pain. Father and brother died of the same disease. Face puffy: conjunctivae moderately anaemic, spleen and liver visibly enlarged; some ascites. Lower end of spleen reaches left iliac fossa; it is hard and not freely moveable. Lower edge of liver 3 fingers breadths below costal margin. No oedema. No palpable enlargement of other lymphatic tissue. Urine normal. No malarial parasites in blood. No leukaemia. Wassermann negative. Aldehyde test for kala azar negative. Six weeks after admission spleen was removed. There were troublesome adhesions to diaphragm, abdominal wall and intestines. Spleen weighed 3 lbs. 3 oz. Patient left hospital three weeks later, and was seen after another month, when the liver was smaller.

Colonel Mackie remembers seeing similar cases at Nasik in 1907, and helping to remove the spleens of two. He says that such cases are common in India, and are not malaria or kala azar or of schistosome origin, and this was not one of MEGAW's peritonitis cases the result of dysentery (this *Bulletin*, Vol. 21, p. 688). There remains Gaucher's familial splenomegaly. The leucocyte count was: Polynuclears, 59; lymphocytes, 30; large mononuclears, 8; eosinophiles, 3. The red cells were normal.

"The sections of the spleen showed moderate thickening of the capsule but no increase in the fibrous trabeculae. The Malpighian corpuscles were decidedly reduced in number, and some were undergoing a hyaline change. The general appearance under the low power suggested an alveolar arrangement of the splenic parenchyma and great reduction in the lymphoid tissue. The alveoli were seen to contain numbers of large polyhedral cells of endothelial type with large circular feebly-staining nuclei.

"No Leishmania or other parasites could be seen and the general structure was light and open and not at all resembling the dense hyperplasia and fibrosis usually seen in protozoal diseases. These characters in general and the overgrowth of endothelial cells in particular decided one in regarding the disease as that of Gaucher's type of splenomegaly."

A. G. B.

VILLALOBOS (Nino). **A Case of Spontaneous Rupture of the Spleen.**—*Jl. Trop. Med. & Hyg.* 1924. Nov. 15. Vol. 27. No. 22. pp. 307–308.

The patient, a coloured man at Port Limon, Costa Rica, was admitted to hospital with severe pain in the abdomen. Eight days before he was awaked at 11 p.m. by a sharp, cutting sensation in the abdomen and nausea.

On admission his attitude suggested intense pain; he sat upright with head and shoulders bent forward. Respirations 28, pulse 100. There was rigidity of the muscles over the left superior quadrant with abdominal tenderness, general but more definite in that region, and dulness on percussion in the left flank, where a clear friction sound was both audible and palpable. No malarial parasites found. Hemoglobin 50 per cent. Leucocytes, 180,000, and the next day 250,000. On operation two rents were found on either side the hilum and 500 cc. of liquid blood in the peritoneal cavity. The slightly enlarged spleen was removed and the patient died.

The author draws attention to the presence of Ballance's sign—dulness in the left flank not varying when the position is changed—and to the great leucocytosis. He considers that malaria and typhoid need not be considered in this case. Leukaemia, a cause of ruptured spleen, may have been present; no differential count or autopsy was made.

A. G. B.

WELLS (Herbert S.). **The Absorption and Excretion of Carbon Tetrachloride in Animals and in Man.**—*Proc. Soc. Experim. Biol. & Med.* 1925. Jan. Vol. 22. pp. 235–237. [1 ref.]

Absorption was studied in dogs after injection of 3 cc. of CCl_4 into loops of intestine, duodenum and colon being tied off under general anaesthesia. The dogs were killed at intervals up to 30 hours and the amount of the drug remaining in the gut determined. The whole dose was absorbed in 24-30 hours. When 50 per cent. alcohol is added, up to 100 cc. there is no tendency to increased absorption, but with 97 per cent. alcohol absorption is decidedly accelerated in the first few hours. The addition of 10 cc. saturated mag. sulph. slightly decreases the amount absorbed. When the expired air of dogs is passed through activated charcoal a very high percentage of the CCl_4 absorbed from an intestinal loop is shown to be rapidly excreted by the lungs, in one case 96 per cent. The author found that in himself the drug was more rapidly absorbed and excreted than in dogs. The maximum rate of excretion coincided with the greatest intensity of subjective sensations of dizziness and of the odour of the substance in the breath; thereafter the rate fell rapidly, the curve reaching the base line in 24 hours. The rate of absorption in man is thought to depend on the concentration of the drug in the small intestine. SCHULTZ and MARX suggest that absorption is most rapid from the duodenum and less so further down the gut, but this is not the case in dogs. If the rapidity of absorption depends on concentration, toxicity might be reduced by giving the drug in divided doses, and prolonging its presence in the intestine.

A. G. B.

GARDNER (George H.), GROVE (R. C.), GUSTAFSON (R. K.), MAIRE (E. D.), THOMPSON (M. J.), WELLS (H. S.) & LAMSON (Paul D.). **Studies on the Pathological Histology of Experimental Carbon Tetrachloride Poisoning.**—*Bull. Johns Hopkins Hosp.* 1925. Feb. Vol. 36. No. 2. pp. 107–133. With 6 figs. [18 refs.]

The drug used in these experimental studies was chemically pure CCl_4, and the animals used were dogs that appeared to be healthy, and some puppies and rabbits for comparison. Autopsies were made both on animals dead from poisoning by CCl_4 and on animals killed

at specified times after administration of the drug. The main conclusions from the experiments are that CCl_4 causes central necrosis of the liver lobules when given by mouth, by inhalation of vapour, by subcutaneous injection, intraperitoneally, or by rectum. This necrosis has been observed as early as 12 hours after oral administration, and the maximum lesion occurs about 48 hours after; healing begins 3 or 4 days after oral administration and is not complete in 5 weeks. The smallest oral dose that produced necrosis was 0·5 cc. per kgm. in one series of experiments, and 0·176 cc. per kgm. in another. After oral administration evidences of real nephritis appeared not more frequently than would be found in any large series of dogs. The authors were never struck by the presence of adrenal lesions.

Simultaneous oral administration of alcohol and 4 cc. CCl_4 per kgm. to adult dogs greatly increased the effect of the CCl_4, as shown by tremendous liver destruction and high death rate. Administration of fatty substances—cream, olive oil, paraffin oil—with CCl_4 did not much affect either the liver necrosis or the death rate. Intraportal injections of CCl_4 produced only diffuse haemorrhagic liver necroses, and injections into a peripheral vein produced only foci of haemorrhage, oedema, and an occasional patch of necrosis, in the lungs.

A. A.

TAYLOR (Harden F.). **A Case of Hypersensitiveness to Carbon Tetrachlorid.**—*Jl. Amer. Med. Assoc.* 1925. Jan. 24. Vol. 84. No. 4. p. 280. [2 refs.]

The author used carbon tetrachloride to remove from his hands some bituminous belt-dressing used in the laboratory. By night the hands were swollen and itched intensely. Next day they could not be used and were blistered, "small globular sacs deep in the skin, mostly never breaking." The inside of the mouth was "almost as if burned by hot soup." Other poisonings followed when the hands were exposed to vapour of carbon tetrachloride. Such hypersensitiveness may be the cause of untoward effects of this drug. The author is very sensitive to iodoform also.

A. G. B.

STRAUB (W.). **Zur therapeutischen Beherrschung des Oleum chenopodii.** [The Safe Administration of Oleum Chenopodii.]—*Klin. Woch.* 1924. Oct. 28. Vol. 3. No. 44. p. 1993. [1 ref.]

Apropos the case of a child which received oil of chenopodium on two consecutive days "3 times daily," and died with symptoms of inflammation of intestines, liver and kidneys, and other fatal cases in Germany, the author discusses this drug and the technique of its administration. The most important point is to prevent absorption, and the death in the case mentioned was probably due to the "3 times daily." It should be given in a single sufficient dose, its removal accelerated when its work is done, and it should be repeated only after a sufficient interval. The technique advised by W. E. DEEKS in the United Fruit Company Report (1923) is quoted with approval. In Germany, the drug is put up under fancy names in gelatine capsules and dosage adjusted to age is rendered impossible; nearly always there is a second ingredient such as santonin; the keeping properties are

unknown and before the capsule reaches the patient decomposition may have occurred. The drug should be ordered *ad hoc* from the druggist in appropriate single doses. Owing to its volatility, the author regards carbon tetrachloride as much more dangerous than oil of chenopodium given advisedly.

A. G. B.

BRAUN (Carl). **Tödliche Vergiftung durch Chenopodiumöl (sog. amerikanisches Wurmsamenöl).** [Fatal Poisoning by Oil of Chenopodium.]—*Muench. Med. Woch.* 1925. May 15. Vol. 72. No. 20. pp. 810–811. [16 refs.]

To a child of 22½ months suffering from round worms the mother gave, in the afternoon and evening, 3 drops of oil of chenopodium, and in the morning, 6 drops. Two hours later the child vomited, and later a number of worms were passed. In the evening a doctor found the child in coma with dilated pupils and infrequent pulse and respiration. Death occurred 15 hours after the vomiting. The autopsy revealed nothing to account for death, and none of the usual signs of chenopodium poisoning; no trace of oil was found in the organs, but the bowels had acted freely. The case is regarded as one of overdosage.

A. G. B.

i. FOLEY (H.) & CÉARD (L.). **Sur des cas d'empoisonnement causés par une liliacée des régions sahariennes** (*Ornithogalum amoenum* **Batt.**).—*Arch. Inst. Pasteur d'Algérie.* 1924. Dec. Vol. 2. No. 4. pp. 507–516. With 3 figs on 1 plate & 1 chart in text. [3 refs.]

ii. MUSSO (M. L.) & PERRIN (M.). **Etude du bulbe d'***Ornithogalum amoenum.*—*Ibid.* pp. 517–522. With 4 text figs. [5 refs.]

i. In 1921, in the detention camp (Compagnie de discipline) at Colomb-Bechar, 12 men out of the effective of 70 were admitted to hospital for weakness and emaciation or chronic diarrhoea, and 7 deaths were attributed to cachexia, the result of obstinate diarrhœa. In these cases blood was usually present in the stools. The heart was affected early and was slowed to 50 or even 40 beats. The development of the disease was rapid. Post-mortems revealed congestion, sometimes extreme, of the digestive tube; the greater curvature of the stomach was sometimes ulcerated; the small intestine had in some instances an ecchymotic aspect. The mesenteric glands were swollen. There was congestion of liver, kidney and lung. It was concluded that the signs pointed to the ingestion of some irritant or toxic substance. An enquiry led to the discovery that to avoid the company routine the men had eaten the bulbs of a Liliaceous plant allied to Scilla growing in abundance in the neighbourhood. This was *Ornithogalum amoenum*, known to the natives to be poisonous. Experiments performed on dogs to which the minced bulbs were fed caused death in 5-6 days with lesions of acute haemorrhagic gastro-enteritis and marked congestion of liver and kidneys. In a similar experiment with squill it was the kidneys that were chiefly affected.

ii. The chemical composition of the bulbs was studied. Toxic principles, probably alkaloids, were found. Search for glucosides was negative. Further work is required.

A. G. B.

MELNOTTE (P.). **Un cas de septicémie à bacille pyocyanique.**—*Arch. Inst. Pasteur d'Algérie.* 1924. Dec. Vol. 2. No. 4. pp. 458–461. With 1 chart in text.

The patient in this case was admitted with a temperature of 41° C., abdomen tender on pressure, pain in liver, spleen slightly enlarged, and congestion at base of both lungs. There was slight diarrhoea, but no stupor. On the 4th day *Bacillus pyocyaneus* was isolated from a blood culture. Culture of stools, serological tests, and microscopic examination of blood gave no particular revelations. After administration of an iodized autovaccine the temperature began to fall and convalescence proceeded normally from the 21st day, though interrupted by an attack of benign tertian malaria that was cured immediately by quinine. A rabbit of 2 kilos, which received 1 cc. of the culture of *B. pyocyaneus*, died in 32 hours. It seems therefore that the patient's condition in this case was due to an infection with *B. pyocyaneus* although no suppurating wound could be discovered.

A. A.

TOUBERT. **Sur un cas d'éruption polymorphe consécutive aux morsures d'hirudinées, à Lai-Châu (Tonkin).**—*Ann. de Méd. et de Pharm. Colon.* 1924. Sept.-Oct.-Nov.-Dec. Vol. 22. No. 3. pp. 415–418.

The patient in this case was a European who, about a week after his return from an expedition during which he had suffered from the bites of land-leeches, was severely attacked by "tropical" malarial fever that left him prostrate. In this condition an extensive area around the three-weeks-old scars of two leech-bites on the right shin suddenly became the scene of an excruciatingly painful purplish swelling, soon followed by a copious herpetiform eruption, the vesicles of which were sanguinolent. During 15 days there were three crops of this intolerable eruption over the field of inflammation, but, after that, convalescence (under treatment) was rapid and at the end of a month only large brown pigmented scars remained. The author attributes the bloody vesiculous eruption to some latent or dormant haemolytic toxin from the leech-bites which took effect as soon as the patient's natural resistance was defeated by the malaria.

A. A.

HOLLAND (H. T.). **A Case of Gangosa in Baluchistan.**—*Indian Med. Gaz.* 1924. Aug. Vol. 59. No. 8. pp. 406–407. With 3 figs.

The case of a man, 18 years of age, suffering from gangosa is related, the first case, so the author believes, to be recorded in India. The disease started four years before as a pimple, at the side of the nose, which ulcerated, the process spreading about the nose and both lips, followed by scarring and contracture so that only two small apertures, half an inch in diameter, gave access to the buccal cavity. His previous history included a visit to Mesopotamia at 9 years of age, but he had never had any previous illness, and there was no history of either acquired or inherited syphilis [nor presumably of yaws]. The Wassermann reaction was definitely positive: a differential blood count normal. Operative treatment to restore the mouth aperture was successful.

Microscopic examination of tissues was negative for bacilli, spirochaetes and leishmania.

H. S. Stannus.

D'ALMEIDA (João). **Tratamento cirúrgico da elefantiase.**—*Revista Méd. de Angola.* (No. especial 1e Congresso de Med. Trop. da Africa Ocidental. Vol. 3. 3a. 4a. e 5a. Sessões.) 1923. Aug. No. 4. pp. 495–510. With 8 figs. [7 refs.]

This paper, after giving a résumé of the various surgical methods of treating elephantiasis, describes an operation, or rather a sequence of operations, devised by Professor Teixeira BASTOS, for the details of which the reader must consult the original paper, but briefly we may say that it appears to be an adaptation of KONDOLEON's operation. A long elliptical section is removed on the inner aspect of the leg and by union of the edges pressure is exerted on the tissues below, which forces the lymph to flow through the aponeurotic layer at a higher tension and the venous stream passes by the deeper vessels. Notes are given of four cases and there are five diagrams illustrative of the method.

H. Harold Scott.

JAME (L.). **Un cas d'éléphantiasis du membre inférieur chez un arabe nomade des hauts-plateaux.**—*Arch. Inst. Pasteur d'Algérie.* 1924. Dec. Vol. 2. No. 4. pp. 462–467. With 3 text figs. [13 refs.]

According to the author the elephantiasis observed in Algeria is not of filarial origin, and the only microfilaria that has yet to come to notice—and that only once—is *perstans*. The case of elephantiasis here reported was typical of the disease as it occurs in Algeria and Morocco, in the absence of filaria embryos, the normal leucocyte formula, the infiltration of the thickened skin with sanguineous serum, and the presence of micro-organisms (apparently having no aetiological significance) in this serum.

A. A.

GRAHAM (George S.). **A Case of Sickle Cell Anemia with Necropsy.**—*Arch. Intern. Med.* 1924. Dec. 15. Vol. 34. No. 6. pp. 778–800. With 4 text figs. [8 refs.]

This is a careful clinical study and an extremely laborious and comprehensive post-mortem investigation, macroscopic and microscopic, of a case of sickle-cell anaemia (cp. *Bulletin*, Vol. 21, p. 670; Vol. 20, p. 670; and Vol. 7, p. 329), confirming the view that this disease is a definite entity, demonstrable by clinical and laboratory methods and evidenced post-mortem by lesions of the haemopoietic system. The author concludes that it appears to be a racial condition brought into evidence by exciting agents, of which suspicion is directed particularly towards a streptococcus. The following is the author's summary of the gross and microscopic changes:—

"Acute streptococcic bronchopneumonia with early empyema; streptococcic bacteraemia; anaemia associated with sickling deformity of the red blood cells; icterus; splenic atrophy; splenadenoma; chronic osteomyelitis with repair and hyperplasia of marrow and osseous tissue; chronic periostitis and osteitis of tibia; acute intracapillary and chronic productive capsular glomerulonephritis; chronic hepatitis; metastatic haematopoiesis in liver, spleen, and lymph nodes; haemosiderin pigmentation of liver and kidney; chronic pretibial skin ulcer; cholelithiasis."

A. A.

MOSER (R. Allyn) & SHAW (William J.). **Sickle Cell Anemia in Northern Negro.**—*Jl. Amer. Med. Assoc.* 1925. Feb. 14. Vol. 84. No. 7. pp. 507–508. With 1 fig.

All the cases of sickle-cell anaemia, about 100, hitherto reported have been in negroes of the Southern States; the case here briefly abstracted relates to a negro, with some admixture of Indian blood on the mother's side, from northern Kansas. This appears to be the chief point of interest.

A. A.

RODHAIN (J.). **Une épidémie de poliomyélite aiguë au Congo Belge.**—*Revista Méd. de Angola.* (No. especial 1e Congresso de Med. Trop. da Africa Ocidental. Vol. 3. 3a. 4a. e 5a. Sessões.) 1923. Aug. No. 4. pp. 331–367. With 3 plates and 1 folding map. [7 refs.]

A full account of an epidemic of poliomyelitis that occurred in the Belgian Congo in 1919-20—the first such occurrence since the European occupation of the country. Not only infants and children, but also young adults over 20 years of age were attacked. The almost constant prodromata of an attack were fever and diarrhoea or abdominal cramps—also somnolence, particularly marked in abortive cases. Both clinically and experimentally the disease conformed to the type elucidated by HEINE-MEDIN, and defined by WICKMAN. The mortality attained 27 per cent., or, if the considerable number of adult cases be included, 23·9 per cent. Malaria did not predispose to an attack, but trypanosomiasis certainly did, and, conversely, an infection of poliomyelitis precipitated the declaration of trypanosomiasis. Though it is possible that the infection might have been introduced, it is much more likely that it spread from one of the endemic foci in the Lower Congo.

A. A.

DE BOER (H. S.) & ALLEN (G. V.). **Acute Lymphatic Leukaemia in a Native.**—*Kenya Med. Jl.* 1924. Nov. Vol. 1. No. 8. pp. 248–249.

The patient was admitted to hospital at Mombasa with fever and a large spleen, the provisional diagnosis of typhoid fever was not confirmed by the agglutination test and quinine was given till his death on the 21st day. The spleen enlarged progressively till it almost fitted the abdomen. The authors remark that lymphatic leukaemia is apparently rare in Africans and note that pyrexia and a large spleen do not necessarily mean malaria or enteric.

A. G. B.

CHESTERMAN (Clement C.). **Myelogenous Leukaemia in a Negro: Failure of Tryparsamide.** [Memoranda.]—*Brit. Med. Jl.* 1925. Apr. 11. p. 694.

The spleen was much enlarged; no swellings of lymphoid tissue were detected. The leucocytes in six estimations were about 450,000; polymorphs 39 per cent., myelocytes 33, large mononuclears 19, lymphocytes 5; erythrocytes, 2,950,000, with normoblasts and megaloblasts. A total of 12 gms. tryparsamide given in 14 days had no beneficial effect; and did not cause amblyopia, though this would almost certainly have occurred in a case of trypanosomiasis with central nervous infection.

A. G. B.

MATTLET (G.). **Bronchomycoses dues à des Sterigmatocystis dans l'Urundi. Communication préliminaire.**—*Ann. Soc. Belge de Méd. Trop.* 1924. Nov. Vol. 4. No. 2. pp. 167–176. With 3 figs.

The author describes five cases of chest affection in natives with cough and expectoration, in which he found the spores of a fungus which he grew on artificial media. He was unable to find any acid-resistant bacilli and attributes the symptoms to the fungus, though in one instance the symptoms disappeared while the fungus persisted. The cases were treated with iodide of potassium and emetine.

A. G. B.

GOMES (J. M.). **Mycose broncho-pulmonar**—*Monilia Butantanensis* **(n. sp.).**—*Ann. Paulist. Med. e Cirurg.* 1924. Oct. Year 12. Vol. 15. No. 10. pp. 246–251.

From the sputum of a patient presenting the signs and symptoms of phthisis the author isolated a mycotic organism which developed well on glucose agar as a white, soft, pasty growth. It fermented, without production of gas, saccharose, glucose, arabinose, galactose, dextrin, maltose and laevulose, but not mannite, lactose or inulin. Inoculation of the sputum into a guineapig and three small rats yielded no results; similarly with peritoneal inoculation of the pure culture. Intravenously, however, it caused death in 3-4 days with expulsion of blood-stained froth from the mouth and nose. The fungus, consisting of round or oval yeast-like cells and short mycelia, was found in and cultured from the lungs, spleen, kidney and liver. The organism is classed among the Monilia and named by the author *Monilia butantanensis*.

H. Harold Scott.

CHOPRA (R. N.), assisted by DE (Premankur). **A Preliminary Note on the Pharmacological Action and Therapeutic Properties of Kuth Root.**—*Saussurea lappa.*—*Indian Med. Gaz.* 1924. Nov. Vol. 59. No. 11. pp. 540–544. With 2 graphs. [3 refs.]

Saussurea lappa is a Composite plant growing in the north-western portion of the Himalayas, especially in Kashmir. It is well known in the native systems of medicine; the roots are dug up in large quantities and shipped from Calcutta and Bombay to China and the Red Sea. It is the chief ingredient in an astringent stimulant ointment, is a powerful aromatic stimulant used in cholera, protects Kashmir fabrics from moth, and in China is used as incense. Its chemistry and pharmacological action were studied. The active principles prove to be an essential oil, a glucoside and an alkaloid, the first two being the pharmacologically active bodies: the essential oil has strong antiseptic and disinfectant properties; the glucoside causes a small but persistent rise of blood pressure; and both have a slight but definite broncho-dilatory effect. The powdered root and alcoholic extract are expectorant, and are beneficial in asthma. The drug has no anthelmintic properties. The authors state that they tried the alcoholic extract in a series of cases of asthma and found that it had not only a remarkable effect in relieving the spasm but also prevented recurrence of attacks, loosened the phlegm and cleared the respiratory passages. "All our asthmatic patients benefited under this treatment."

A. G. B.

CHOPRA (R. N.) & CHANDLER (Asa C.). **Indian Santonin. Extracted from the Indian Species of** *Artemisia maritima.—Indian Med. Gaz.* 1924. Nov. Vol. 59. No. 11. pp. 537–540. [6 refs.]

Santonin, the authors say, costs in India as much as Rs. 720 per lb., or 3 grains for a rupee. It comes from Russia via Europe, and is obtained from *Artemisia cina* and other species growing in the Kirghiz, in Turkestan. Recently, owing to disturbance in Russia, the drug has been scarce. The Indian species, *A. maritima*, grows in the Western Himalayas at 4,000-12,000 ft. between Kumaon and Kashmir, and also in Baluchistan and Afghanistan, and santonin has been extracted from it by a firm of pharmaceutical chemists in Calcutta; the plant is found to contain about 0·5 per cent. santonin, as against 1·2-1·4 per cent. for the Russian product, but the yield is believed to vary with the time of year. Chemical tests showed that the Indian differed little from the imported santonin, and clinical trials on 26 cases showed it to be harmless and effective in the expulsion of ascarides. At present the Kashmir santonin costs 670 rupees per lb., but a large demand would reduce the price.

A. G. B.

ZOELLER (Chr.). **Immunité de race vis-à-vis de la scarlatine. La réaction de Dick chez les sujets de race jaune.**—*C.R. Soc. Biol.* 1924. Dec. 19. Vol. 91. No. 36. pp. 1315–1317. [1 ref.]

[DICK and DICK, at Chicago, separated a toxic filtrate from cultures of haemolytic streptococci from scarlet fever. This filtrate gives an intracutaneous reaction in persons presumably susceptible to scarlet fever, is neutralized by serum from scarlet fever convalescents and gives no skin reaction with these or in persons who have had scarlet fever some time before.]

The author says that it appears clearly established that the Anglo-Saxon [? white race] is hyper-receptive to scarlet fever, whereas the yellow race is only exceptionally so [this is not the case among the northern Chinese, *ante*, p. 151]. The author tested the two races in Annam. Whereas in the white race there were 38 positives out of 125, among 50 Annamites only 4 were positive, and those very feebly so. Examination of 10 Annamite serums showed some to contain antitoxin, either naturally or acquired by contact with scarlatinal virus; in others the immunity seemed to correspond to a kind of indifference of the tissues for streptococcic toxin or to neutralization of the toxin on the spot by a process of local defence. In any case, the experiments show that the threshold of immunity is higher in the European than in the Annamite.

A. G. B.

DE SOUZA (Salazar) & TEIXEIRA (C. Coelho). **La symbiose fuso-spirillaire.**—*Revista Méd. de Angola.* (No. especial 1e Congresso de Med. Trop. da Africa Ocidental. Vol. 4. 6a. 7a. e 8a. Sessões.) 1923. Aug. No. 4. pp. 343–347.

The writers have investigated 29 cases of an ulcerative stomatitis (Vincent's angina), the features of which they differentiate from noma, and have found the fuso-bacillary-spirillum infection in all of them. In 23 of the cases they also examined the cerebrospinal fluid, in which they observed hypertension and hyperalbuminosis

in 95·6 per cent., a moderate lymphocytosis in 95·6 (or even 100) per cent., and a positive Bordet-Wasserman reaction in 90 per cent. They therefore regard the fuso-bacillary-spirillum as pathognomonic of a generalized infection, of which this form of ulcerative stomatitis is a local manifestation.

A. A.

ROBINEAU (Marcel). **La pratique de l'avortement. Coutume des indigènes du Cameroun.**—*Revista Méd. de Angola.* (No. especial 1e Congresso de Med. Trop. da Africa Ocidental. Vol. 5. 9a, 10a. e Sessão de encerramento.) 1923. Aug. No. 4. pp. 105–109.

Provoked abortion is common in Cameroon. A case is described of a young woman who, married very young to a much older man, disliked her husband, and had interrupted four pregnancies in the hope of his exchanging her for another wife. Analogous cases are said to be common, and abortion to be the most frequent cause of metritis in native women. The causes of this custom, which is unknown to the men, are the marriage of young girls and system of polygamy. The methods used include vaginal injections of infusions of *Tephrosia vogelii* and *Erythrophloeum guineense.* The remedies are the interdiction of very early marriages and the gradual introduction by Christian missions of monogamy.

A. G. B.

LOEVENBRUCK (L.). **Quelques cas d'abcès de la rate chez le noir.**—*Bull. Méd. du Katanga.* 1924. Oct. Vol. 1. No. 5. pp. 177–184.

In the first three months of 1924 four cases of splenic abscess, three in males, were admitted to hospital at Panda, and a fifth in which a white infarct was found in the spleen.

In case 1 the symptoms were enteritis and pain in the left side; the temperature varied between 37° and 38·5° C. Enteric fever was suspected. Owing to dulness and absence of air entry on the left side of the chest a needle was inserted between the 9th and 10th rib in the scapular line and pus withdrawn. On operation the pus proved to be not in the thorax, but below the diaphragm; the patient died. At the autopsy the spleen was found to be riddled with abscesses. No other lesion was discovered and no amoebae. In case 2, admitted with fever and diarrhoea, attention was not drawn to the splenic region for nearly three weeks, when splenic abscess was diagnosed. On laparotomy fetid gas and chocolate-coloured pus escaped from a cavity the size of a child's head. No amoebae were found. The patient recovered. In case 3 there was a swelling in the hypogastrium, which on incision gave vent to a litre of chocolate pus. The cavity was cleansed and the abdomen closed, but the abscess refilled; signs now appeared, without pain, in the splenic region, and a fresh opening gave exit to 2 litres of pus. Later there was evidence of intestinal perforation, but the patient recovered. In the 4th case splenic abscess was diagnosed and, again, foul-smelling gas and nearly 2 litres of pus were evacuated. In the 5th case, brought-in-dead, there was an abscess the size of a walnut in the spleen, and peritonitis.

It is suggested that these patients had septic thrombosis of the splenic vessels, of intestinal origin. No microbes were seen in the pus. Two of the patients walked into hospital and none made any great complaint. For the operation a simple incision under local anaesthesia and a drainage tube sufficed. [Compare WALLACE's experience of splenic abscess in Northern Nigeria, this *Bulletin,* Vol. 19, p. 616.]

A. G. B.

STERN (E.). **Durchbruch eines Lienalabszesses durch die äussere Abdominalwand.** [Rupture of Abscess of Spleen through the Abdominal Wall.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Feb. Vol. 29. No. 1. pp. 44–46.

The patient was a boy of 3 years in Palestine who had suffered from malaria since birth. The liver was enlarged, the spleen reached the inguinal region on the left, and crossed the navel line. One morning an abscess was found to have burst. The opening was enlarged and dressings applied, and in 6 weeks the wound was soundly healed. Afterwards there was no trace of splenic enlargement.

A. G. B.

KHOURI (J.). **Recherches sur l'hématurie en Egypt.**—*Bull. Soc. Path. Exot.* 1924. Nov. 12. Vol. 17. No. 9. pp. 811–818. [5 refs.]

The author, in the course of 20 years at Alexandria, has studied 591 cases of haematuria; he gives the following table:—

Haematurias observed in Egypt (1904-1924).

Number of urines examined ...	48,355	
Number of haematurias observed...	591 =	1·2 per cent.
Male	541 =	91 ,, ,,
Female ...	50 =	9 ,, ,,

Number of cases observed.	Nature and cause of haematuria.	Percentage.
310 ...	Bilharziasis	52·5
40 ...	Filariasis	7·0
12 ...	Cancer	2·0
1 ...	Tuberculosis	0·2
95 ...	Nephritis and pyelonephritis	16·0
3 ...	Calculous pyelitis (uric acid)	—
7 ...	,, ,, (calcium oxalate)	—
3 ...	,, ,, (mixed)	5·7
6 ...	,, ,, (triple phosphate) ...	—
15 ...	,, undetermined	—
7 ...	Lithiasis (uric)	—
31 ...	,, (oxalic)	11·5
3 ...	,, (mixed)	—
27 ...	,, (phosphate ammonium, magnesium)	—
6 ...	Prostatitis, acute infections, septicaemias ...	—
25 ...	Undetermined causes	4·1

In endemic foci of bilharziasis the proportion owning that cause would be much greater. He draws attention to the low incidence in women [but does not state what proportion of his clientèle they formed]; of the bilharziasis cases women formed only 6 per cent. In all the 310 cases *S. haematobium* was in question. In four, eggs with a lateral spur were seen also in the urine; it is noted that two of these patients had chronic dysentery, and it is considered probable that the urine in the four instances was soiled with faecal matter, and that there was a double infection. Albuminuria was always present, but in some cases out of all proportion to the amount of blood and pus. Nephritis and pyelonephritis were rare in bilharzial infections. Natives formed 92 per cent. of the cases of bilharziasis.

In the haematurias due to filariasis (*F. bancrofti*) women formed 15 per cent.; haematochyluria accounted for 92 per cent. of all cases. There was never any renal complication.

The author discusses urinary amoebiasis at some length. He notes that the urine is an unfavourable medium for the Entamoeba, and evidently believes this affection to be much rarer than do other Egyptian physicians. In three specimens of urine from pyelitis cases and three from amoebic dysentery he was unable to find the amoeba, though specific treatment had not begun. Two cases sent to his laboratory as urinary amoebiasis proved to be, one a new growth and the other bilharzial cystitis. This man recovered under emetine treatment and he suspects that such improvement often accounted for the diagnosis of urinary amoebiasis; his urine was examined frequently but amoebae were never seen. Only those cases in which the amoeba has been recognized and studied with the modern technique should be labelled urinary amoebiasis.

A. G. B.

FORSYTH (J. M.). **Tropical Ear.**—*Ann. Trop. Med. & Parasit.* 1924. Apr. 30. Vol. 18. No. 1. pp. 61–76. With 1 coloured plate.

An informative article, with details of auriscopic appearances and local treatment, which cannot be adequately summarized. The author defines "tropical ear" as a localized infection of the external auditory meatus which does not involve the middle ear, but sometimes, though rarely, extends into it. He considers it under the heads, otomycotic and bacterial. Of 15 otomycotic cases 14 were due to an Aspergillus, and 1 to a yeast, and of the aspergillus cases there were 4 distinct colour varieties. Of the bacterial division the most important subdivision is "true tropical ear," an acute affection causing great pain with deep-seated pus formation, and caused by *B. pyocyaneus*. Illustrative cases are given. A differential diagnosis table and a series of coloured illustrations of the appearances seen with the auriscope are given.

A. G. B.

WOOD (John Y.). **Report on Ankylostomiasis, Beri-Beri, Amoebiasis, Filariasis, Leprosy and Bilharziasis in Freetown Prison.**—*Sierra Leone Ann. Med. & San. Rep. for the Year 1923.* pp. 62–65.

Ankylostomiasis.—A single specimen of faeces from each prisoner was examined and, if negative in plain smear, was mixed with saturated salt solution as described by WILLIS (this *Bulletin*, Vol. 19, p. 246). Of 252 prisoners examined, 166, or 65·9 per cent., were positive, and were treated by (*a*) beta naphthol grs. 40, followed in an hour by thymol grs. 30. and Mist. alba four hours later; (*b*) carbon tetrachloride m. 30-45 "on bread"; (*c*) eucalyptus oil, castor oil and chloroform mixture. The numbers are small, but the first method was the most effective, and the third was useless.

Beriberi.—There were 63 cases in 1922-3, of which 3 died. The symptoms are analysed. The chief were: Oedema, 74 per cent.; absent knee jerks, 63; change of cardiac rhythm, 50; cardiac dilatation, 47; valvular changes, 46; Romberg's sign, 25; and ataxia, 19; hyperaesthesia, 22. [There is no mention of paralysis, or atrophy of muscles.]

Amoebiasis.—Cyst carriers were treated with either emetine bismuth iodide or emetine hydrochloride, and examined once after a week. Of 252 prisoners examined, 32, or 12·7 per cent., were positive, and 16 were treated. The results are given, but are naturally inconclusive.

Filariasis.—Of 203 examined, 29, or 14·3 per cent., harboured *F. bancrofti* larvae in their blood.

Leprosy.—Details are given of two cases in which a decided improvement followed intravenous treatment with Ol. chaulmoograe 750 parts, chloroform 250, and carbolic acid 10. One patient was bedridden and is now about doing light work.

Bilharziasis.—Two cases of the urinary form were treated with tartrate of antimony and are believed to be cured.

A. G. B.

MONTEL (M. L. R.). **Erythème toxique par le Stovarsol.**—*Bull. Soc. Path. Exot.* 1924. Oct. 8. Vol. 17. No. 8. pp. 630–631.

A lady who had been treated at Saigon with emetine for amoebic dysentery had some further symptoms at Paris, with the presence of cysts. She received daily for 8 days two tablets of stovarsol. On the 7th day she complained of malaise, nausea, and rushes of heat; on the 8th appeared a macular, morbilliform, very itchy eruption, with polyadenitis, pains in all the limbs and fever (39·5° C.); the next day the rash became general, the fingers and toes were swollen, the buccal mucosa red, and the conjunctiva congested; pruritus was intense. Thereafter she gradually improved. A month later she was normal and cysts were no longer found. The author observes that the erythema resembled closely that following arsenobenzol; the patient was very susceptible to drugs.

A. G. B.

SANARELLI (G.). **Sur la pathogénie du charbon dit "interne" ou "spontané."**—*Ann. Inst. Pasteur.* 1925. Mar. Vol. 39. No. 3. pp. 209–297. With 3 plates in colour. [127 refs.]

The argument of this paper is that internal or "spontaneous" anthrax is due, not, according to long-accepted belief, to direct germination of swallowed spores that have escaped gastric digestion, but to "haematogenous" infection. The author's experiments, made chiefly on young and adult guineapigs and rabbits, show that large quantities of non-sporing anthrax bacilli may be administered to these animals, either by mouth or anus, or by appendicular fistula, without harmful effect—the bacilli are killed in the intestine, just as they are, *in vitro*, by the gastric or by the intestinal juices. These animals will also resist considerable doses of sporing bacilli administered by the mouth, if the mucosa be not injured—the spores are killed in the same way by the digestive juices or by the *coli* bacilli. The animals will also resist considerable doses (not above 50,000 spores) of sporing bacilli if these be introduced into the lungs by the nasal route without abrading the skin or mucosa; in this case the spores are all phagocyted and, remaining dormant, gradually undergo digestion in the phagocytes or are excreted by the intestine. But if the animals when thus infested with a moderate dose (not above 50,000 spores) of sporing bacilli have their natural resistance weakened—by introduction into some viscus, or subcutaneously, or intravenâ, of arsenic, quinine, lactic acid, nucleinate of hyposulphite of soda, glucose, peptone, blood, milk, distilled water, or dead or living cultures of *coli* bacilli, or by exposure to heat (37° C.), or by a diet entirely free of

water—the spores ingested by the phagocytes will be liberated and a general septicaemic anthrax will be the result. The surest method is to inject one of these spore-liberating solutions into the spleen 24 hours after introduction of the sublethal dose of sporing bacilli into the lungs. (A mortal dose of bacilli (100,000 spores) introduced into the lungs overcomes the pulmonary phagocytes, and sets up a general septicaemic anthrax, at once). It is, according to the author, from the infected blood that the lesions found, after death, in the alimentary canal originate—not from swallowed spores.

A. A.

BOEDEKER (H. A.). **"Etiology of Anthrax."** [Correspondence.]—*Kenya Med. Jl.* 1924. Oct. Vol. 1. No. 7. p. 215.

Continuing this correspondence [this *Bulletin*, Vol. 21, p. 912] Dr. Boedeker has seen malignant pustule in natives concerned in the hide trade at Nairobi, and among natives at Kisumu who rubbed infected mutton-fat on their bodies at a time when anthrax was raging among their cattle. He recalls also one case of internal anthrax, found in a native picked up dead; films from the mesenteric glands were positive.

A. G. B.

PAWAN (J. L.). **Locomotor Ataxia with Charcot's Joint Disease in a Negro.**—*Ann. Trop. Med. & Parasit.* 1924. Oct. 31. Vol. 18. No. 3. pp. 347–350. With 1 plate.

The patient was a negro of 58, born, bred and resident all his life in Trinidad. History of a penile chancre at 19, marriage 7 years later, and loss in early life of 9 out of 11 children. At 46 he began to suffer from "(1) periodic attacks of sharp shooting pains about his knees and legs with a tendency to fall when walking; (2) hot burning sensations about his body; (3) difficulty of micturition; (4) tenderness and pains about his knee-joints which gradually increased in size. The pains about his knees persisted for two years and the difficulty with micturition for six years. He has been impotent for the last eight years."

The knee-joint lesions seem to have been typical of Charcot's disease; they are described and figured in a good photograph. Knee and ankle jerk were absent. Inco-ordination of lower extremities, Argyll-Robertson pupil and Rombergism present. Feet brought down in walking with a stamp. The blood Wassermann 4 plus. The only complaint was the discomfort and inconvenience caused by the condition of the knee joints.

A. G. B.

RIDLEY (H. N.). **Poisoning by Bamboo Hairs.**—*Jl. Trop. Med. & Hyg.* 1924. Oct. 15. Vol. 27. No. 20. p. 278. [1 ref.]

Ridley refers to a report that in Malaya the ingestion of bamboo hairs with black sand or powdered glass produces a form of chronic dysentery causing ulceration of the stomach and intestines. Some cats were thus treated and died in a few days [symptoms not mentioned]. He describes the hairs, which are produced on the leaf sheaths of most kinds of bamboos, amongst which he cites *Oxytenanthera sinuata*, and two species each of Bambusia and Dendrocalamus. They are 1-2 mm. in length, very slender, sharply pointed at one end and easily detached. The hairs are administered in coffee or curry. [Similar information, also without case reports, is given in GIMLETTE's "Malay Poisons and Charm Cures."]

A. G. B.

ROGERS (Leonard). **Alcohol in the Tropics.**—*Practitioner.* 1924. Oct. Vol. 113. No. 4. (No. 676). pp. 281–288.

Sir L. Rogers finds that the consumption of alcohol predisposes to heat stroke, as well as to hepatitis and liver abscess. The occurrence of liver abscess is almost invariably associated with irregular or intemperate habits (WARING), and its rarity in India in women and children is attributed to their abstention from the use of alcohol. The administration of alcohol in many of the most important tropical diseases is positively harmful and he does not know of any serious tropical affection in which its regular exhibition is of value. Though he is not aware of any definite evidence that drinking a very moderate amount of well-diluted alcohol after sunset at the evening meal has done any harm, he believes it would pay insurance companies to reduce premiums to abstainers living in the tropics. Norman CHEVERS and Edmund PARKES are cited against alcohol, though the former wrote: "Good food and beer and wine in great moderation are valid aids to efficient bodily and mental work in that climate [India]."

A. G. B.

SMITH (S.). **Diphtheria in Secunderabad.**—*Jl. Roy. Army Med. Corps.* 1924. Oct. Vol. 43. No. 4. pp. 282–288.

The object of this paper is to draw attention to a small series of cases of diphtheria—not exactly an outbreak, but something more than sporadic—in Secunderabad. The cases were not typical, and the Klebs-Loeffler bacillus was not always to be discovered, and even when it was found was not constantly in presence. He thinks it likely that similar anomalous and sporadic cases of the disease may occur in other stations on the plains of India where diphtheria is believed to be rare, and that they should be watched for.

A. A.

CHIADINI (Massimo). **L'amebiasi e la febbre maltese in Romagna.**—*Giorn. di Clin. Med.* 1924. Oct. 30. Vol. 5. No. 15. pp. 582–584.

During 1923 and 1924 several cases of amoebic dysentery were seen in the Civil Hospital of Cesena (Forlì). Four kilometres distant, in the Rio Marano district, ten more cases occurred, some in children, some in adults. Emetine in doses of 8-9 cgm. daily, together with rectal administration of quinine bi-hydrochloride, brought about rapid amelioration of symptoms. The courses never exceeded a total of 1 gm. of emetine.

Prior to 1915 undulant fever was not known or was overlooked in the Romagna. During recent years cases have occurred in Ravenna, Forlì, and in Bologna, and in 1923 the disease assumed an epidemic character. Thirty-one cases were seen by Professor GIUGNI in the environs of Lugo, 12 by TEDESCHI in Gatteo.

H. Harold Scott.

REYES (Carmelo). **Appendicitis among Filipinos.**—*Jl. Philippine Islands Med. Assoc.* 1925. Mar. Vol. 5. No. 3. pp. 75–83. [7 refs.]

The following table of admissions for appendicitis into the surgical wards of the Philippine General Hospital sufficiently explains the origin of this enquiry :—

Admissions for the last 5 years (1920-1924 inclusive).

1920	140
1921	190
1922	272
1923	484
1924*	529
	1,615

* November and December excluded.

The natural question follows : Is this a real or an apparent increase, and if real, is it to be attributed to a change in habits of the Filipinos ? The study is based on 2,150 Filipino patients, more than 75 per cent. of whom had operations. Data are given of age, sex and occupation [which would be of value if other relevant data were supplied]. Parasites were found in 18 per cent. of the stools and 38 per cent. of those appendices that were microscopically examined—a striking difference, explained, however, by the statement, " routine examination of the stools was not done." Information is given of the state and anatomical disposition of the appendix at operation and a wealth of detail about the symptoms. No case was seen in a child under five, which the author suggests is due to the relative immunity of Filipino children to Oxyuris. Comparing the figures for parasites with those of American statistics (CECIL and BULKLEY) the author finds that, whereas in these Oxyuris was present in 84 per cent., and Trichuris in 13, in those the Trichuris figures were 42 per cent., and the Oxyuris only 4 ; Trichuris+Ascaris account for another 21 per cent., and Ascaris alone for 11 per cent. The last two parasites are looked upon as " no mean contributing causes in the production of appendicitis." The author considers that the increase in appendicitis is both real and apparent. Increased meat consumption among Filipinos may have been contributory to the increase, but the information on this head is meagre. It is considered significant that the occupation table is headed by students and clerks, because they have adopted American methods of living and eating, including the bolting of food [but we are not told what proportion of hospital admissions these classes formed].

A. G. B.

i. SITSEN (A. E.). **Over Appendicitis in Indië.**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1924. Vol. 64. No. 6. pp. 907–912. [3 refs.]

ii. VAN DER GUGTEN (F. E.). **Betreffende de frequentie der appendicitis.**—*Ibid.* pp. 913–914.

iii. LICHTENSTEIN (A.). **Appendicitis in Indië.**—*Ibid.* pp. 934–939. [2 refs.]

i. Sitsen emphasizes the necessity of producing numerical data when discussing the prevalence of appendicitis in the tropics. The expression " rare " is subject to various interpretation. The majority of cases operated on certainly occur in Europeans. Concerning Chinese

the material is too limited to allow any conclusions. The author, a pathologist, examined five appendices obtained by operation on natives; in two cases there was no inflammation, in one an inflammation of the wall of the caecum, affecting the appendix also; in the other two cases there existed a typical chronic appendicitis. Both cases concerned natives of somewhat higher social standing, following more or less the European habits of life. This supports the author in his opinion that the different prevalence of this disease is at least partly caused by habits of life and nutrition.

Obliteration of the appendix, considered as a sequel of chronic inflammation, is found in 20-25 per cent. of post-mortems in Europe; the author found it in 1-5 per cent. of post-mortems of natives in Java.

ii. Van der Gugten maintains that appendicitis is not rare. He performed 40 appendectomies within 8 months, but does not state the race of his patients.

iii. Lichtenstein saw in four years approximately 2,000 clinical patients at Weltevreden, among whom there were 5 cases of appendicitis (4 Europeans, 1 Javanese). Other diseases also differ in prevalence in comparison with European statistics. He emphasizes the necessity of differential diagnosis between chronic appendicitis and amoebiasis of the caecum. He proposes that the Medical Section of the Scientific Congress in the D.E.I. in 1926 should deal with the subject of appendicitis in the tropics.

W. J. Bais.

CORREIA (Alberto Carlos Germano da Silva). **A meningite cèrebro-espinal e as suas relações noso-meteóricas com alguns climas angolenses.**—*Revista Méd. de Angola.* (No. especial 1e Congresso de Med. Trop. da Africa Ocidental. Vol. 3. 3a. 4a. e 5a. Sessões.) 1923. Aug. No. 4. pp. 511-536. With 5 charts. [1 ref.]

The author states that there are certain parts of Angola where the "meningitic syndrome, which may or may not be due to the meningococcus, is endemic." Two main foci are mentioned; one in the north-west, comprising Holo, Ginga and Songo, and extending to Melange and Pango Andongo, another in the south-west, the district of Mossamedes, extending to Lubango, Chibia and outlying villages. Certain points such as altitude, temperature and humidity are discussed, but, although the disease is spoken of as epidemic meningitis, and records are attempted to show the prevalence for over 50 years, very rarely does the number of cases exceed one a month. The greatest in any one year occurred in Mossamedes, where in 1912 there were 5 deaths [according to the Table, but 22 according to the text] amongst 44 cases.

H. Harold Scott.

PRATES (M. Maximo). **Ensáios sobre a etiologia dos abcesso quentes consecutivos ás injecções de quinina.** [The Etiology of Acute Abscesses following Quinine Injections.]—*Revista Méd. de Angola.* (No. especial 1e Congresso de Med. Trop. da Africa Ocidental. Vol. 3. 3a. 4a. e 5a. Sessões.) 1923. Aug. No. 4. pp. 413–418.

In view of the large numbers of patients developing abscesses after injections of quinine the author asked his colleagues to allow him to collect aseptically some of the contents of such abscesses. He wished to determine whether the abscess formation was due to infected

material used for injection, or to be ascribed to faulty technique on the part of the operator, or, lastly, whether the abscesses were aseptic and chemotactic, as produced by turpentine injection. He found that the drug itself was sterile, and, further, that it had to some degree a bactericidal action. The chemotactic action of the quinine did not account for the formation of pus, and he concludes that a large proportion of these abscesses are due to insufficient sterilization when the injections are made.

H. Harold Scott.

i. Zeiss (Heinz). **Das Reichsinstitut für Epidemiologie und Mikrobiologie für den Südosten Russlands in Saratow an der Wolga.** [The Imperial Institute of Epidemiology and Microbiology for South-East Russia at Saratov on the Volga.]—*Muench. Med. Woch.* 1924. Nov. 21. Vol. 71. No. 47. pp. 1648–1649.

ii. Figueira (J.). **Quelques cas d'ichtyoxisme.**—*Revista Méd. de Angola.* (No. especial 1e Congresso de Med. Trop. da Africa Ocidental. Vol. 5. 9a. 10a. e Sessao de encerramento.) 1923. Aug. No. 4. pp. 119–122.

iii. Adelino (Antonio Correia). **Ambulâncias de Campanha e dos postos do interior.**—*Ibid.* (No. especial 1e Congresso de Med. Trop. da Africa Ocidental. Vol. 1. 1a. Sessão.) 1923. Aug. No. 4. pp. 239–246.

iv. Nichols (Henry J.). **The Needs of Publication in Tropical Medicine.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 951–957. [United Fruit Company, Boston, Mass.]

i. An account of this Institute at Saratov, a tropical research institute for south-east Russia. It is chiefly concerned at present with plague.

ii. Doubtful cases of fish-poisoning from eating putrid fish—the fish happening to be *Trachinus vipera.*

iii. A paper dealing with travelling ambulances and giving in detail the author's view of the best equipment and its stowage—the instruments, dressings and drugs it is advisable to provide.

iv. The records of the English-speaking countries are here considered. High and much appreciated praise is given to this *Bulletin.*

A. G. B.

REVIEWS AND NOTICES.

WOLFF (J. W.). **Onderzoekingen betreffende Cultuur en Serologie der Leptospirae.** [Researches on the Cultivation and Serology of the Leptospirae.]—*Academisch Proefschrift.* Amsterdam. 1924. 8°, pp. 1–74, with 1 plate (5 figs) & 15 tables [only 10 numbered]. [84 refs.] Abstracted in German in *Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Mar. 1. Vol. 29. No. 3. pp. 111–128. With 5 figs. [39 refs.]

The author of this Dutch dissertation for the M.D. degree has made a careful study of three different strains of *Leptospira*: namely, a strain of *L. icterohaemorrhagiae* from a human case of Weil's disease (Berlin), a strain (really several, but apparently all identical) from Amsterdam rats, and a strain isolated by BAERMANN in Sumatra from the blood of a native with a recurrent fever unaccompanied by jaundice [*cf.* BAERMANN, *Geneesk. Tijdschr. v. Nederl.-Indië*, 1923, lxiii, 885. This *Bulletin*, Vol. 21, p. 260].

According to the author, all these organisms can best be cultivated aerobically—in small tubes (2 cc.), without a layer of paraffin—in the medium devised by VERVOORT (1923). This consists of a solution of 0·1 per cent. peptone and 0·05 per cent. NaCl in tap-water, buffered by the addition of 5-10 per cent. of a phosphate solution and adjusted so that it finally has a pH=7·2. The further addition of 10 per cent. of inactivated rabbit serum (or 1 drop per cc. of whole rabbit blood) appeared to be advantageous, inasmuch as the spirochaetes lived somewhat longer in this solution.

As regards cultural requirements, morphology, and pathogenicity for the guineapig, the three strains studied appeared to be identical. Serologically, however, a curious distinction between them was manifested. The Weil-strain and the Baermann-strain showed no affinities to one another: Baermann Leptospirae were neither lysed nor agglutinated by Weil antiserum, nor were Weil Leptospirae by Baermann antiserum. On the other hand, both antisera produced lysis of two rat-strains up to the titre-limit (1 : 2,000), whilst rat-strain antisera had a similar effect upon both the Weil and the Baermann spirochaetes. "Serological identity between two Leptospira strains is no proof of the complete identity of these strains. They may, none the less, behave differently towards a third strain." It should be added that the author diluted his sera with culture medium, since physiological salt-solution itself affects the organisms harmfully, and therefore cannot be used as a diluent; and he attaches more importance to lysis—as a serological test—than to agglutination.

Though the thesis contains nothing strikingly novel, it yet has some acute annotations and discussions of various other details, and is worth reading in the original by anyone interested in the subjects with which it deals. It is well written and printed, and adequately documented with references to the works of others; but unhappily the name of the foremost worker on the pathogenic Leptospirae—Prof. Ryokichi INADA—is consistently misspelled throughout.

Clifford Dobell.